

22
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JUN 9 1919
U. S. DEPT. OF AGRICULTURE

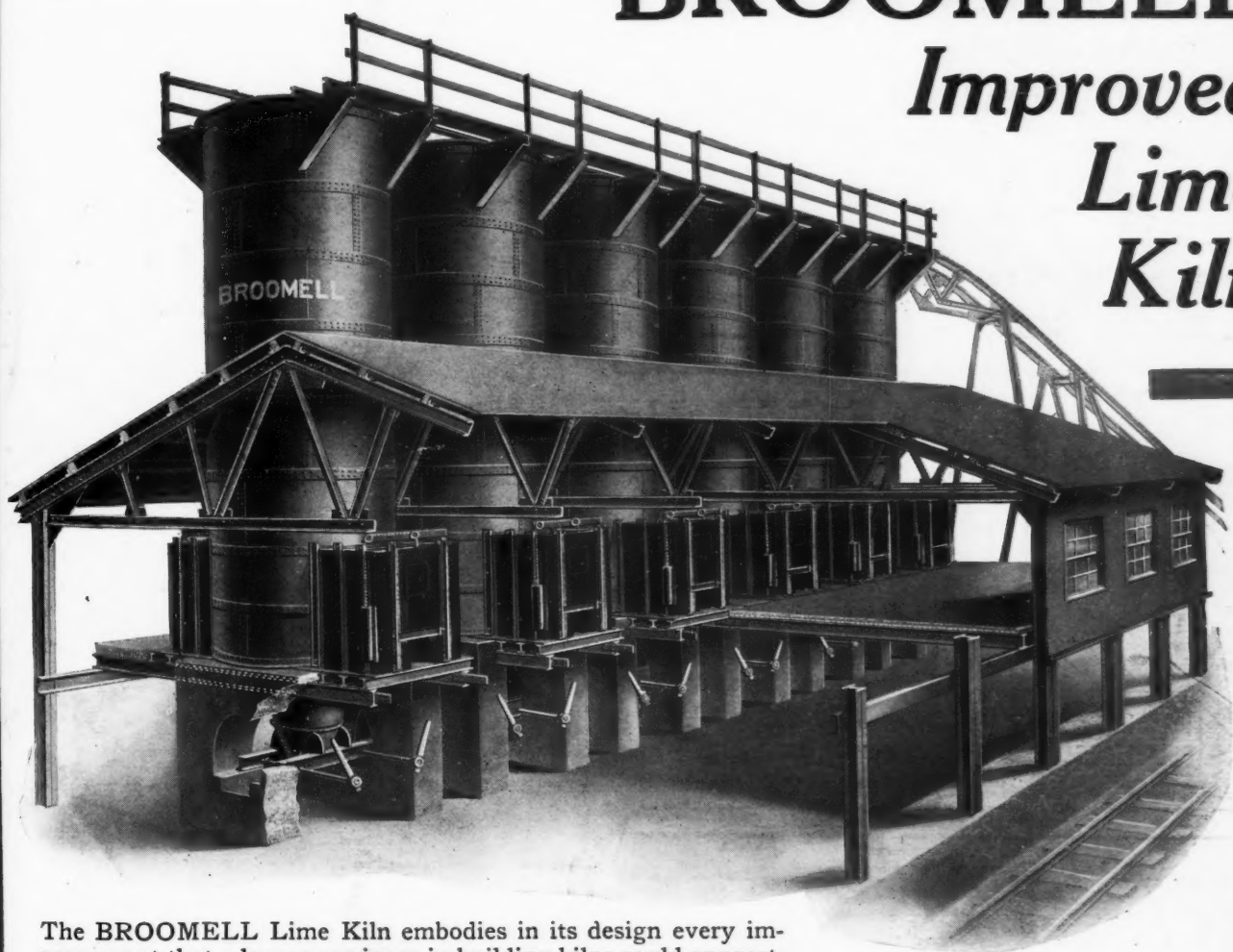
Rock Products

\$2.00 A YEAR

CHICAGO

JUNE 7, 1919

BROOMELL *Improved Lime Kiln*



The BROOMELL Lime Kiln embodies in its design every improvement that a long experience in building kilns could suggest. It can be erected with unskilled labor at minimum cost. All joints of plates are covered with butt straps adding greatly to strength. No riveting. Furnaces are of improved design giving long life to the brick lining. Hearth plates for the furnaces are carried on cross beams which rest on 12 in. beams extending in one piece through the piers. These beams can be extended to carry the floor. Cooling Cones are provided with a heavy Cast Iron sub-

cone at bottom. The sub-cone rests on heavy I Beams thus taking all weight off of the cone sole plate. Discharging gates are of improved pattern and run on anti-friction rollers. Send for Booklet.

A. P. Broomell, Manufacturer, York, Pa., U. S. A.



for 5 years the
elements tried
to destroy it—
but today it is
as good as new

A Keystone Kiln has stood—with top uncovered—since 1914 at a deserted quarry of the Montgomery Lime Company in Houchins, Va.

Today it is being moved sixty miles to a new location by the Kimbalton Lime Co. It is as good as new!

So satisfactory was its performance during the nine years of actual use that the Kimbalton Lime Co. has ordered a sister kiln to meet increased-production plans.

Keystone Kilns

Here you have proof of singular durability and working merit. And note that the Keystone can be moved. This can be done with no other kiln.

236 Kilns in Use to Date

Stacey-Schmidt Manufacturing Co.
York, Penna.

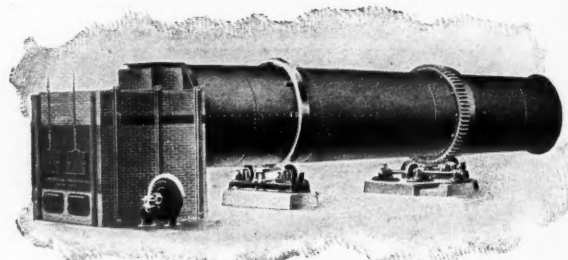
"PENNSYLVANIA" Hammer Crushers



For Crushing and Pulverizing Lime, Limestone, Gypsum, Marl, Shale, Etc. Main Frame of Steel, "Ball and Socket" Self Aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running. No other hammer Crusher has such a big Safety Factor.

PATENTED

Pennsylvania Crusher Company
New York PHILADELPHIA Pittsburgh



DRYERS

AMERICAN PROCESS CO. 68 Williams Street
NEW YORK CITY



ATTENTION

**Cement Manufacturers
and Supply Dealers**

Cement packed in Jaite Waterproof Bags not only excludes the moisture, but also refuses to take on cement dust and dirt. Package always keeps fresh and clean.

THE JAITE CO.

JAITE, OHIO
Sole Manufacturers

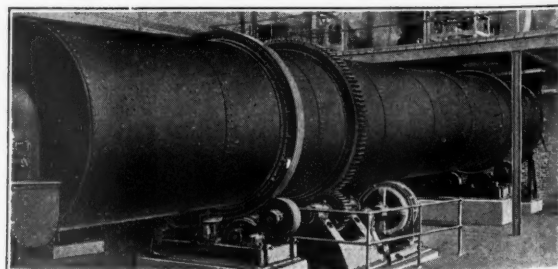
WIRE CLOTH WIRE SCREEN

Coarse or Fine

Phoenix Wire Works
Detroit, Michigan

Ruggles-Coles Dryers

for coal, clays, sand, stone, etc.
They will burn less fuel than
any other type and with their
low power and repair costs are
most economical to operate.



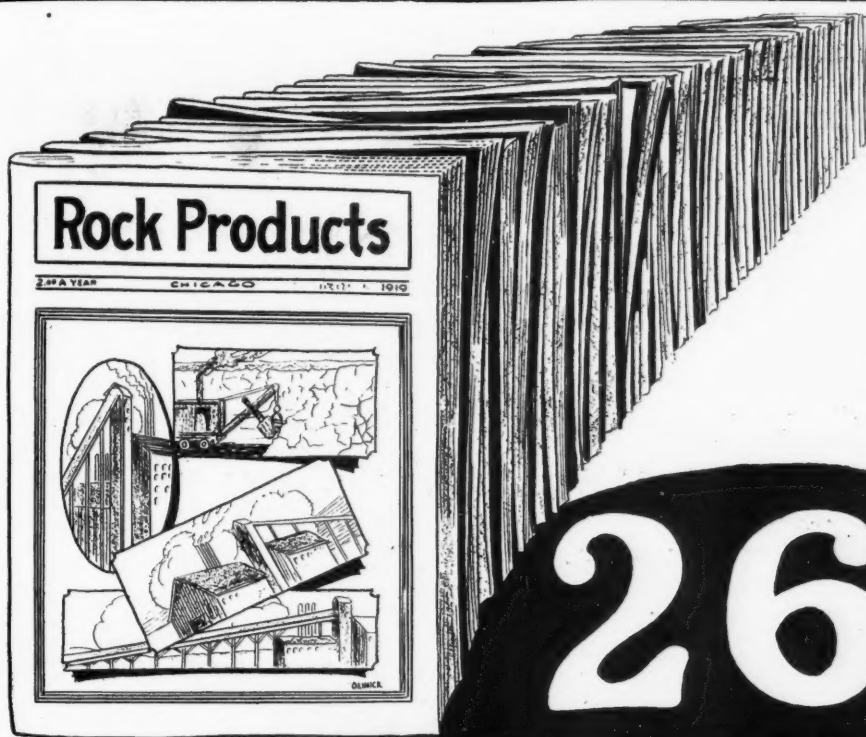
Built to Dry at the Lowest Ultimate Cost

Ruggles-Coles Engineering Co.

McCormick Building
Chicago

50 Church Street
New York

WORKS: YORK, PENNSYLVANIA



**Lots of
Pictures**

Covers

completely the interests of producers of Lime, Cement, Gypsum Products, Crushed Stone, Sand, Gravel, Agricultural Limestone, Phosphate, Potash and Glass Sand.

**26
BIG ISSUES for
\$ 2**

Rock Products

is more than the journal of your industry. It is a **SERVICE**—definite—authoritative—comprehensive—complete. ¶ Every two weeks it comes to you—an expensive compilation of what has happened during the past fortnight in the way of trade activity—selling, buying, legislation. ¶ And there are articles, too—about interesting quarries, pits, lime plants and so on. ¶ In every issue you will also find incorporated new ideas in the day's work—stunts that will make or save you money.



Market Prices

Not the least of **ROCK PRODUCTS'** service is the current market quotations. Always up to the minute and divided into localities. This feature alone should induce you to mail the coupon. Do it! Fill in and mail without delay so that you will get the next issue!

ROCK PRODUCTS is published every other week by Trade Press Publishing Corporation, 542 So. Dearborn St., Chicago. Subscription: \$2.00 a year in the United States, \$3.00 in Canada. Entered as second class matter July 2, 1907, at the postoffice in Chicago, under Act of March 3, 1879.

Vol. XXII—No. 12

June 7, 1919

*This Issue or Any Other, Substantiates the
Above Review of ROCK PRODUCTS*

ROCK PRODUCTS

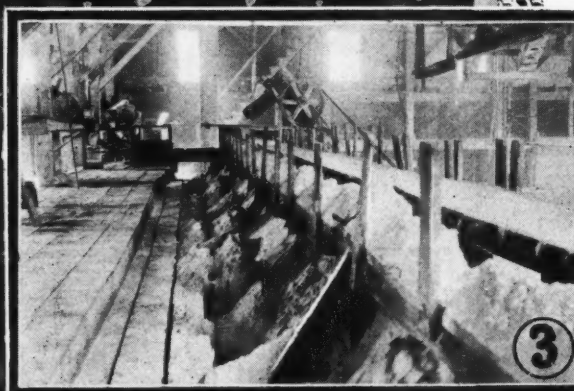
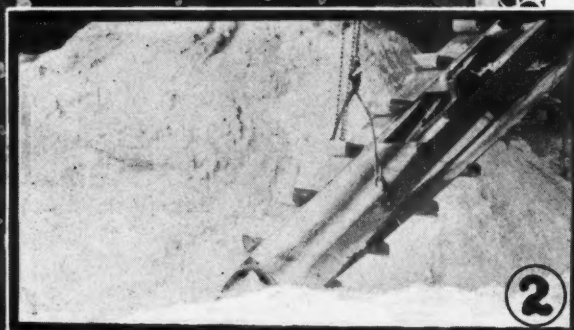
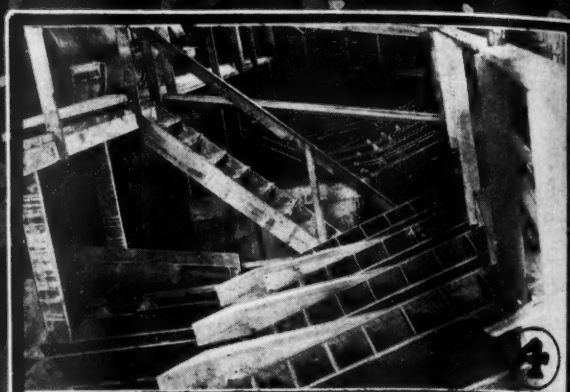
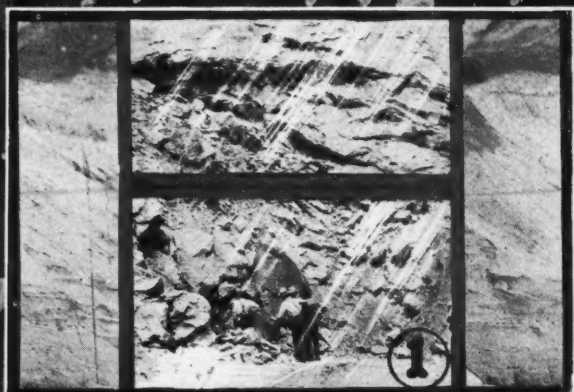
542 So. Dearborn St., Chicago

Here is my \$2.00 for a full year's subscription to **ROCK PRODUCTS**.

Name.....

Address.....

Saying, "I saw it in **ROCK PRODUCTS**," will bring quick action



One is the **Glass** you see through.

Two is the **Sand** that makes the glass you see through.

Three—the **Driers** that dry the sand that makes the glass you see through.

Four—the **Washers** that take the dirt away from the product that it might hurt before it goes to the driers that work so grand that get the moisture out of the sand that makes the glass you see through.

Five—the **Elevators**, trim and true, that convey the sand with its silicate hue, all wet from the washers that take the dirt away from the product that it might hurt that goes to the driers that work so grand that get the moisture out of the sand that makes the glass you see through.

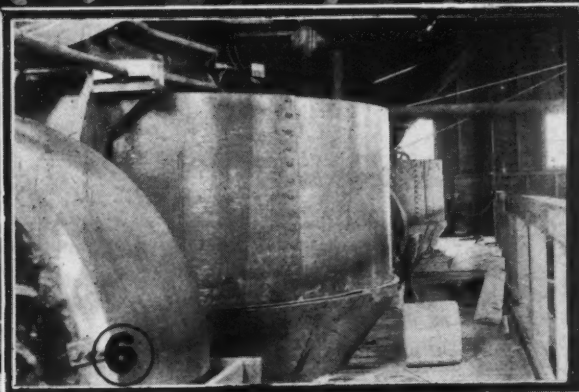
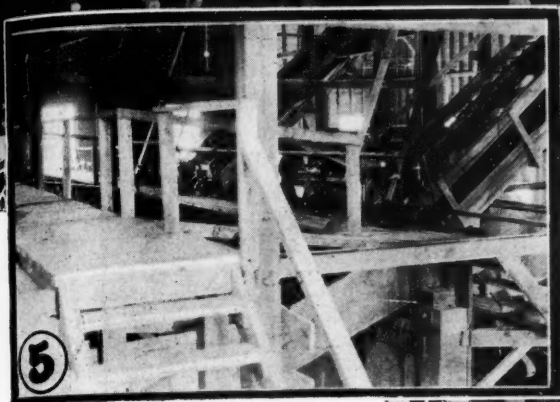
Six—the **Screens** whose perfect work sift and size and never shirk, that convey the sand with its silicate hue, all wet to the washers that take the dirt away from the product that it might hurt that goes to the driers that work so grand that get the moisture out of the sand that makes the glass you see through.

Everything in a Glass-Sand Mill Be

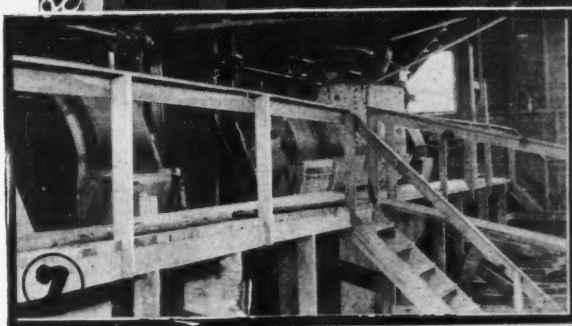
is furnished by us. Every piece of machinery does its part and works as effectively as do the various units we have installed in the various plants of the Berkely Springs Glass Sand District, from which the photos on these two pages were made.

Lewistown Foundry & Machi

Saying, "I saw it in ROCK PRODUCTS," will bring quick action

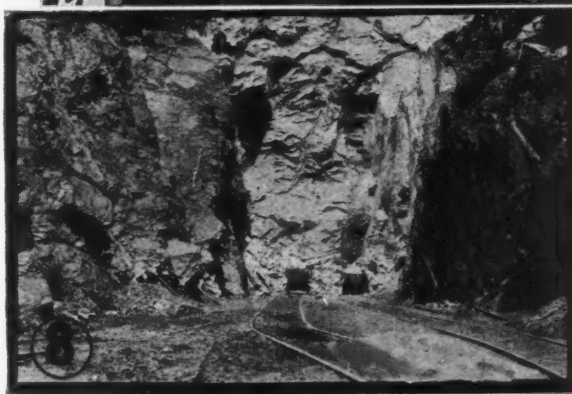


Seven—the **Grinders**, swift and strong, that do their task the whole day long to give to the screens whose perfect work sift their flow and never shirk to feed the elevators, trim and true, that convey the sand with its silicate hue, all wet from the washers that take the dirt away from the product that it might hurt that goes to the driers that work so grand that get the moisture out of the sand that makes the glass you see through.



Eight is the **Quarry** that has a past. Its sides are torn with every blast. The fragments go, right from that spot (to clear the way for another shot), into the grinders, swift and strong, that do their task the whole day long to give the screens whose perfect work sift their product and never shirk that goes to the washers that take the dirt away from the product that it might hurt that goes to the elevators, trim and true, that convey the sand with its silicate hue to the driers that work so grand that get the moisture out of the sand that makes the glass you see through.

These photographs and the accompanying story show briefly the principal operations (from the quarry to the finished product) necessary in preparing sand glass for its ultimate purpose.



Between the Quarry and the Glass Plant

We equip glass sand plants complete in every detail. If you have a plant that produces sand from which glass can be made, let us hear from you and we will reply with some information that will be good for you.

ne Company, Lewistown, Pa.

For better service say, "I saw it in ROCK PRODUCTS"



"ONE MAN - ONE MINUTE"



STURTEVANT "OPEN-DOOR" MACHINERY

"OPEN DOOR" LABORATORY MACHINERY

CRUSHERS, GRINDERS, ROLLS, SCREENS, COAL CRUSHER AND SAMPLERS

Every part accessible for quick, easy and thorough cleaning. No salting of samples. Accurate, automatic adjustments while running. Hundreds in use all over the world.

THE STANDARDS FOR MINES AND TECHNICAL SCHOOLS

Crushers reduce hard rock and ores to $\frac{1}{4}$ -inch and finer.

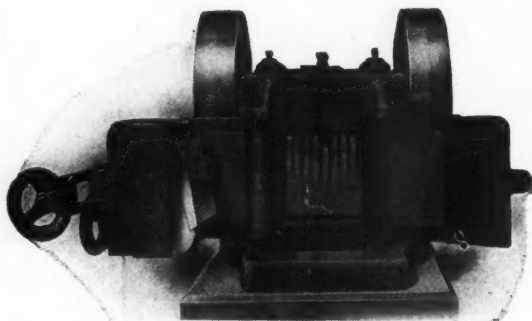
Rolls crush hard rock and ores from $\frac{1}{8}$ -inch to 40 mesh.

Pulverizers grind to from 80 to 100 mesh.

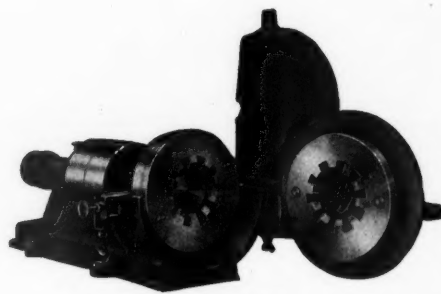
Coal Crusher and Samplers crush coal or coke to $\frac{1}{4}$ -inch and at same time automatically remove a 5, 10 or 15% sample.

ALSO

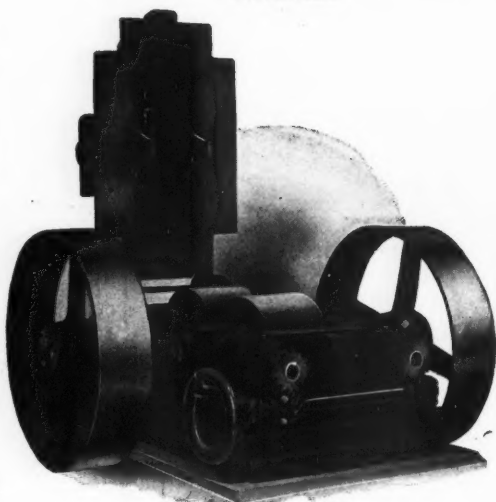
"OPEN DOOR" STEEL ELEVATORS



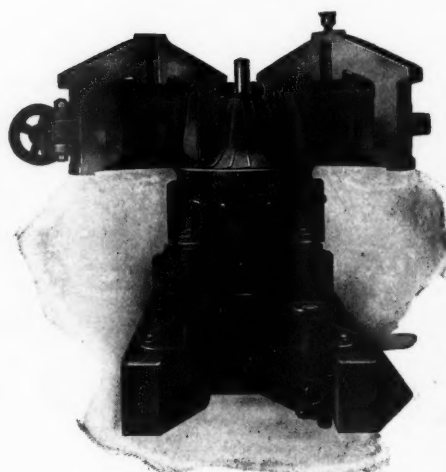
PATENTED



PATENTED



PATENTED



PATENTED

STURTEVANT MILL CO., BOSTON MASS.
HARRISON SQUARE

The advertiser wants to know that you saw his ad in ROCK PRODUCTS



The Fridner Locomotive in Service

Four Years of Satisfaction

No locomotives receive more severe treatment than those used in contractors' service. If they stay on the job, and give satisfaction, it surely proves that they are strongly designed and built of the right materials.

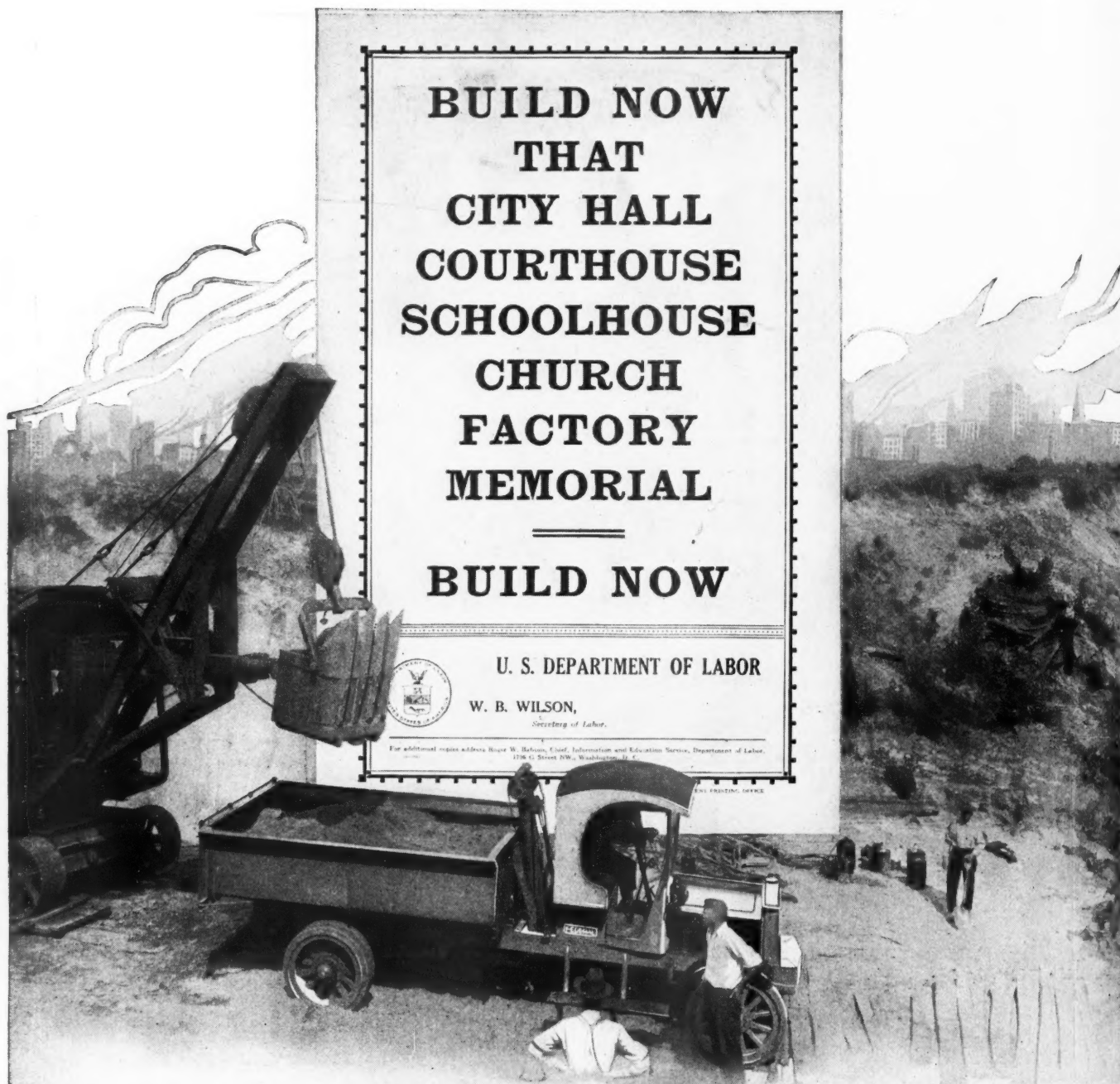
The Baldwin Locomotive Works build both steam and internal combustion locomotives for contractors' service. One of the latter type, weighing five tons and of two feet gauge, is owned by Mr. Sam Fridner of Galveston, Texas, who handles large contracts. Regarding the work done by this locomotive, Mr. Fridner writes as follows under date of March 28th, 1919:

"I am pleased to inform you that since I purchased your locomotive, four years ago, considering the hard amount of work it has performed in my contracting business, hauling over 40,000 tons of rock in placing rip-rap over our Seawall; also hauling gravel in building roads to Camp Logan and Ellington Field and the present hauling of iron ore for the Texas Steel Company at Rusk, Texas, it has given very satisfactory service."

This letter speaks for itself, and confirms the fact that Baldwin Locomotives are **built for service** and that they will serve you well.

The Baldwin Locomotive Works
Philadelphia, Pa.

You will get entire satisfaction if you mention ROCK PRODUCTS



**BUILD NOW
THAT
CITY HALL
COURTHOUSE
SCHOOLHOUSE
CHURCH
FACTORY
MEMORIAL**

BUILD NOW

U. S. DEPARTMENT OF LABOR
W. B. WILSON,
Secretary of Labor.

For additional copies address Roger W. Nelson, Chief, Information and Education Service, Department of Labor,
1200 G Street N.W., Washington, D. C.

AMERICA again has called upon the power and resource of her motor trucks—this time to catch-up her war-interrupted building program.

Just as the nation's calls for war-supply and food-supply were answered, so this newest call is being answered by the combined strength of thousands of trucks. Nothing but the motor

truck matches the speed of steam-shovel excavation. No other carrier is adequate to modern building methods.

Thousands of Federals are making good for builders—giving always that complete satisfaction which has brought from the public an ever increasing demand for more.

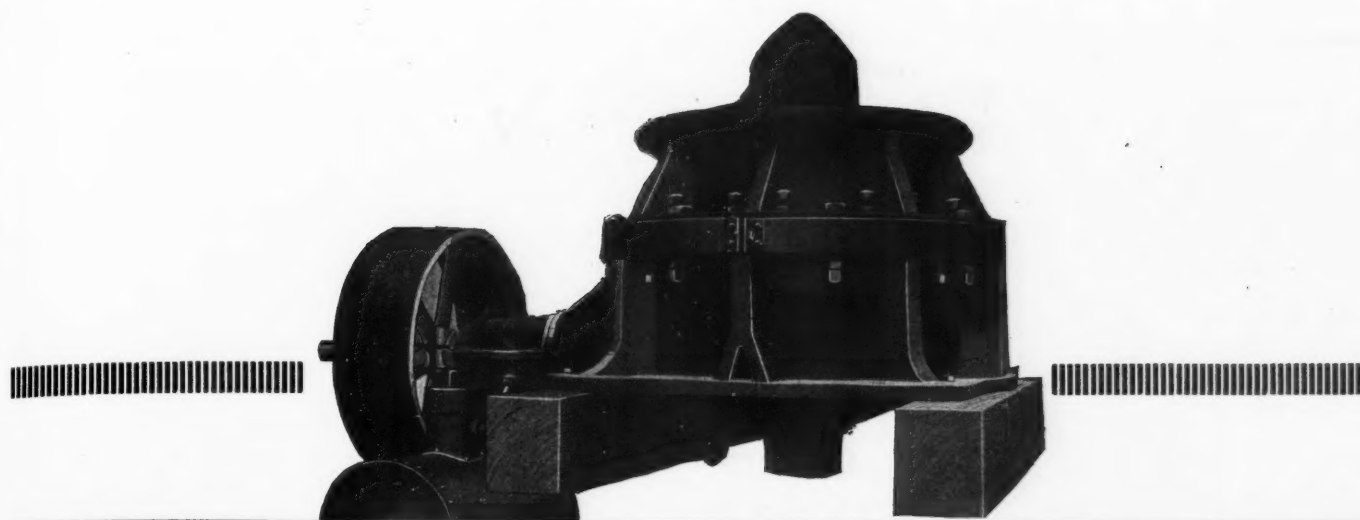
**"Shorten the miles to market
—build better roads"**

"Federal Traffic News," a magazine of modern motor haulage, will be sent free on request to responsible executives.

Federal Motor Truck Company
Detroit, Michigan

FEDERAL

One to Five Ton Capacities



TELSMITH REDUCTION CRUSHERS

Reliable:—Central shaft is rigid, very short. Does not crystallize. Cannot be sprung or broken. Frame is short and heavily metalled. Tramp iron seldom damages this machine, as it develops very little fly-wheel effect.

Gravity Feed:—The receiving areas are so large that no hand or mechanical feeding is necessary with an economical size of feed. Just set the machine under or alongside a storage hopper; and let the rock cover it up. It works as well under fifty yards of stone as with the hopper barely full.

Clean Discharge:—Discharges by gravity through the base of the crusher. There is no centrifugal action to wear out frame; and no flat discharge chute to bank up the crushed rock. The immense diameter of the crushing bowl allows the crushed product free escape even when set so that the head barely clears on the crushing stroke.

Uniform Sizing:—This machine will produce a remarkably uniform product. Here is a screen analysis (Tyler's standard testing screens) on black granite crushed through 9/16-in. discharge opening with a No. 2 crusher:—On 1-in. holes, .8%; on 3/4-in. holes, 1.6%; on 1/2-in. holes, 9.7%; on .371-in. holes, 14.4%; on 3 mesh, 17.8%; on 8 mesh, 29%; on 14 mesh, 9.7%; through 14 mesh, 17%. Total, 100%.

Sizes:—No. 2 size weighs 13,600 pounds; requires 20 HP.; hourly capacity, at 1/2-in. discharge, 10 to 12 tons; at 3/4-in. discharge, 12 to 16 tons. No. 4 size weighs 45,000 pounds; requires 50 HP.; hourly capacity, at 1-in. discharge, 60 to 75 tons; at 1 1/2-in. discharge, 90 to 110 tons. Write for Bulletin 2F11. Yours for the asking.

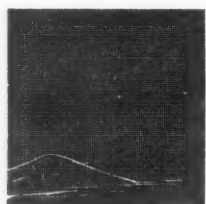
For Producing 1/2-in., 3/4-in., 1-in., 1 1/2-in. Sizes

SMITH ENGINEERING WORKS

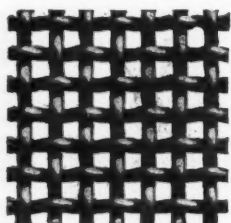
3188 LOCUST STREET, MILWAUKEE, WIS.

Local Agencies: 545 Old Colony Building, Chicago, Ill.; 30 Church St., New York City; 710 Witherspoon Building, Philadelphia; Garfield Building, Cleveland, Ohio; Franklin and Channing Aves., St. Louis, Mo.; 325 W. Main St., Louisville, Ky.

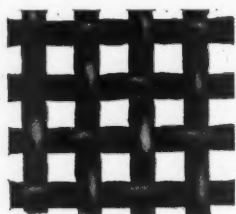
To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry



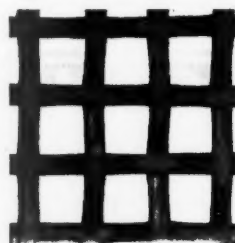
100 Mesh; .0045 Brass



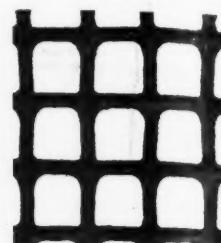
6 Mesh; .080 Wire



3 1/2 Mesh; .135 Wire



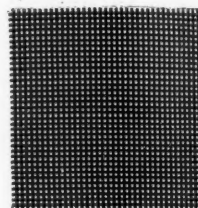
3 Mesh; .105 Rolled



3 Mesh; .080 Galvd.

"TYLER"

DOUBLE CRIMPED WIRE CLOTH : TON-CAP SCREEN
TESTING SIEVES : TESTING SIEVE SHAKERS
HUM-MER SEPARATORS



40 Mesh; .0135 Wire

HUM-MER SEPARATOR SCREEN

A "Drumhead" Tension Screen

Electrically Vibrated

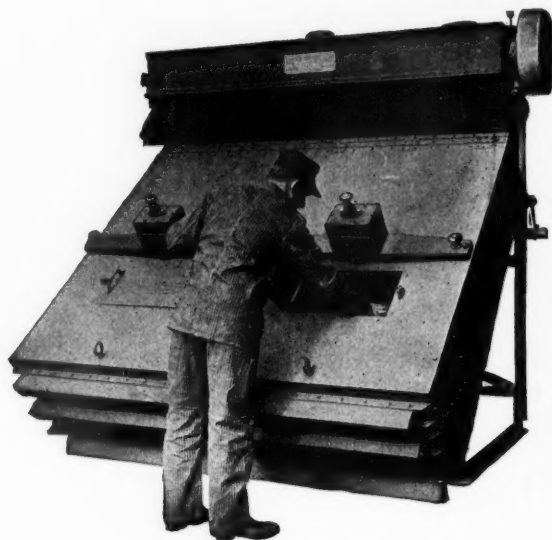
The HUM-MER is a separator with tightly stretched "drumhead" tension screening surface, electrically vibrated at high speed.

The combining of "drumhead" tension with electrically produced high speed vibration, produces a screening action which is different from anything heretofore devised.

With the HUM-MER it is possible to obtain any desired intensity of screen vibration. This is very important, for it is obvious that a fine material requires a different intensity of vibration than a coarse, heavy material.

The HUM-MER will handle either coarse or fine material, in fact, it will handle fine sizing in a manner that has never been possible with mechanical vibration.

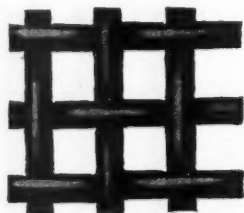
Full particulars sent upon request



Six Foot, Two Surface

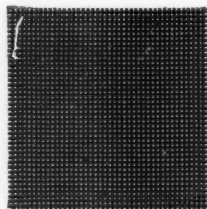
HUM-MER SEPARATOR

Screens Limestone, Silica, Cement, Gravel, Phosphate Rock
and all other Rock Products

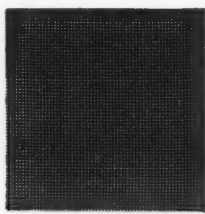


2 1/2 Mesh; .148 Wire

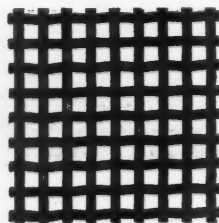
The W. S. Tyler Company
Cleveland, Ohio



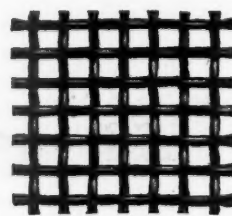
45 Mesh; .011 Wire



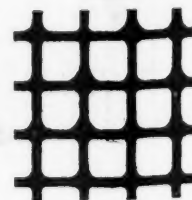
60 Mesh; .008 Wire



8 Mesh; .054 Wire



6 Mesh; .054 Wire

4 Mesh; .047 Wire
Galvd. After Weaving

It gets immediate attention if you mention ROCK PRODUCTS

AMERICAN PUMPS


Centrifugal and
Deep-Well Plunger
Types Are Built to
Meet All Conditions
of Pit and Quarry
Service

Put your pumping problems up to our expert engineers. They will render you valuable assistance in planning an appropriate installation and advising you as to the most suitable style and size of pump for your particular requirements. Ask for Catalog 149R for Centrifugal Pumps and 130A for Deep-Well Plunger Pumps.

**AMERICAN
WELL WORKS**
General Office & Wks.
AURORA, ILL.



Saying, "I saw it in ROCK PRODUCTS," will bring quick action



PLANT AT
SPRINGFIELD,
OHIO WHERE

"ARNOLD"
KILNS ARE
INSTALLED.

Burning Testimony

Our installations are our basis for the solicitation of further business. We make no claims that we cannot prove by examples in actual operation.

When we say that "ARNOLD" Kilns use less fuel than others; that they double capacity; that we build them quickly and at moderate cost, we point to our installations to substantiate our statements.

Fact is, many of the most profitable lime plants have "ARNOLD" Kilns. These operators have given us glowing accounts of our work.

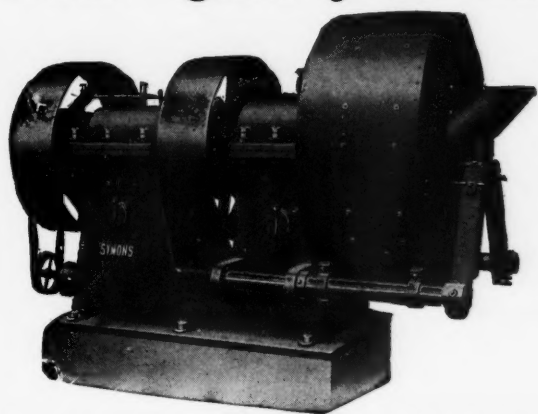
Our Service Department is expert in designing, building and repairing kilns in part or in their entirety. Ask for facts.

VALENTINE ARNOLD
Contractor and Builder Woodville, Ohio, U. S. A.

SYMONS DISC CRUSHERS

SPEED!—

From Quarry to Car



If you doubt it—look at this record: One 48-inch Symons (name of plant on request) takes 80 to 100 tons of 4-inch feed and reduces the limestone to 1 1/2 inches in one hour.

At another Symons plant a 24-inch model crushes hard heads. Its speed is 25 tons per hour. Feed, 2 inches. Size of product, 1/2 inch.

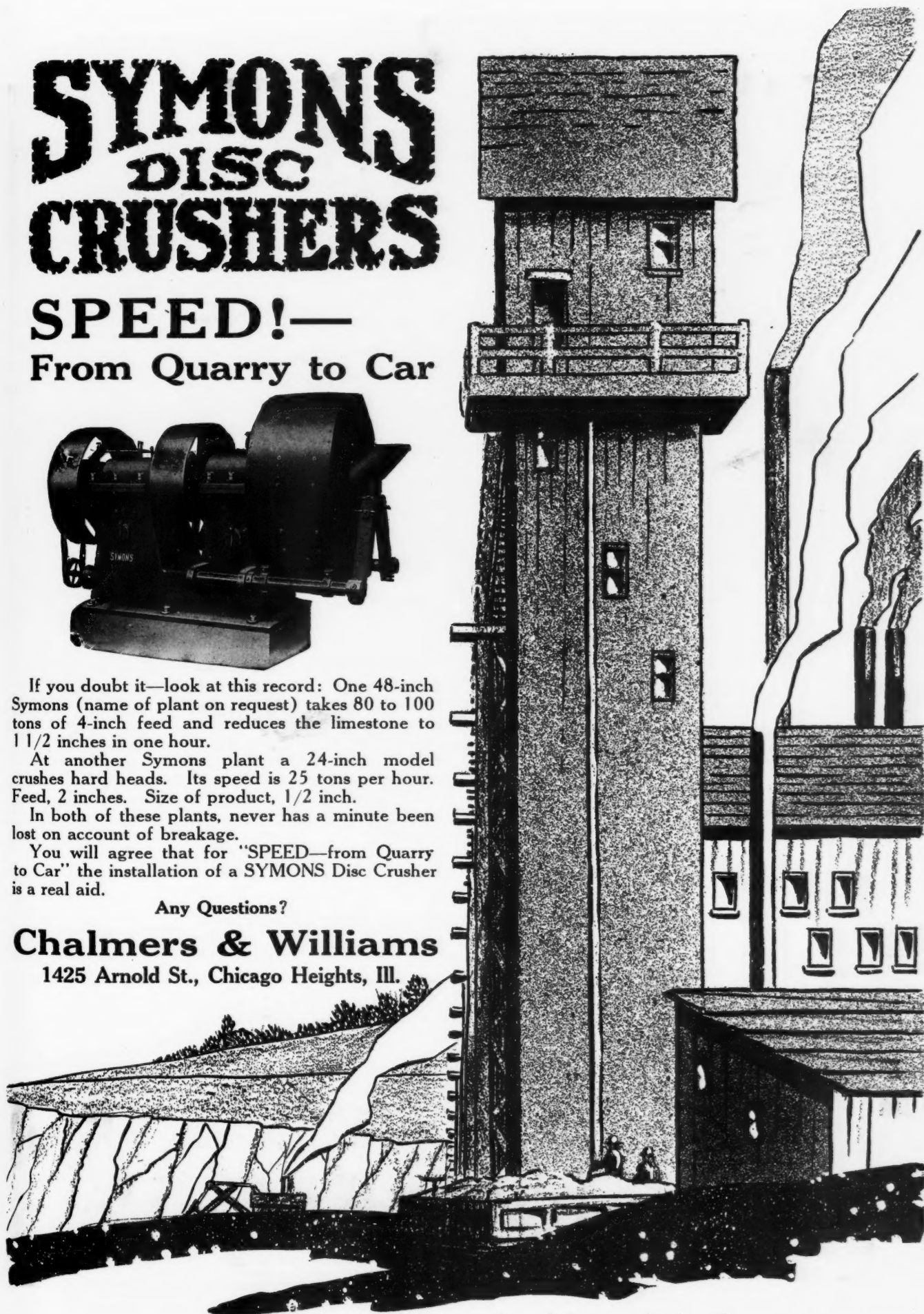
In both of these plants, never has a minute been lost on account of breakage.

You will agree that for "SPEED—from Quarry to Car" the installation of a SYMONS Disc Crusher is a real aid.

Any Questions?

Chalmers & Williams

1425 Arnold St., Chicago Heights, Ill.



For better service say, "I saw it in ROCK PRODUCTS"

Prosperity—

INDUSTRY can be speeded up to its war pace, if you will do your part. There is no longer reason for hesitation. There is big work to be done in your business and in ours. Those who act promptly will make the most of the greatest opportunity America has ever had.



Pierce-Arrow trucks are available to do their part. Our experience is available to those who need our expert guidance in

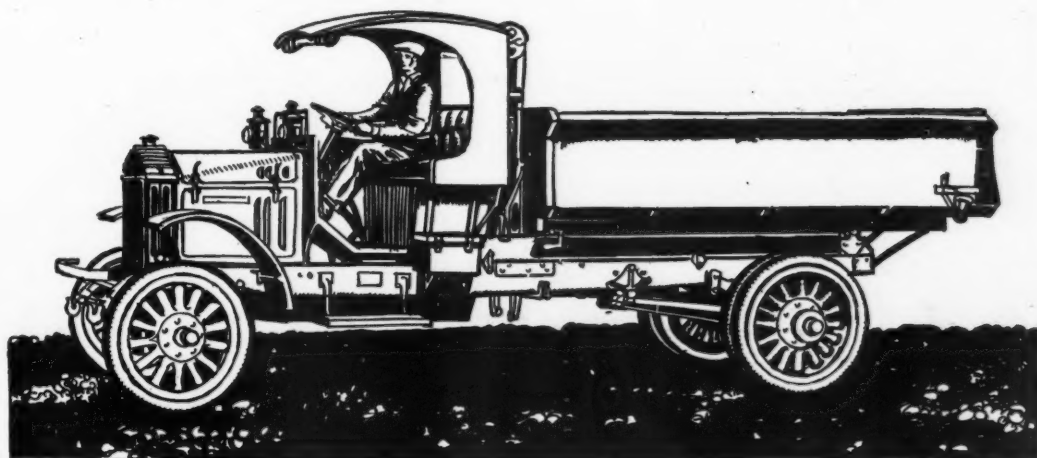
PIERCE- ARROW

depends upon you

expanding their transportation facilities or in redirecting them.

Don't wait. Call on us for aid to help you solve any problem that vexes you. We have met all conditions and made good in 148 different lines of business.

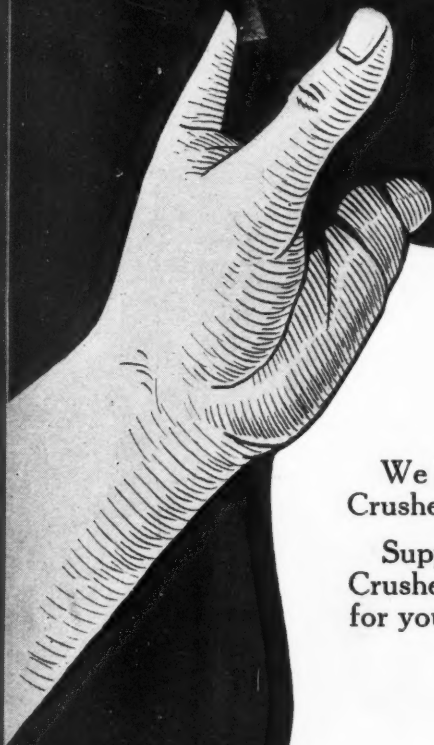
THE PIERCE-ARROW MOTOR CAR CO.
BUFFALO, N. Y.



Delivers more work in a given time;
Loses less time on the job and off the job;
Costs less to operate and less to maintain;
Lasts longer, depreciates less and commands a higher resale price at all times.

You will get entire satisfaction if you mention ROCK PRODUCTS

Traylor



Here's a Picture of One of the Largest Crushers Ever Made

We have just completed this 60" Traylor "Bull Dog" Gyratory Crusher. It's capacity is 2,500 tons per hour!

Supposing you let us draw up suggestions for a Traylor Crusher—gyratory, jaw or roll type—that will make real profits for you by its capacity, reliability and longevity.

We Hope to Hear From You

TRAYLOR ENGINEERING & MFG. CO.
ALLENTOWN, PENNA.

NEW YORK

CHICAGO

LOS ANGELES

SPOKANE

It gets immediate attention if you mention ROCK PRODUCTS

WILLIAMSPORT WIRE ROPE

Is a tried and proven product, known for more than thirty years as of the highest quality. We offer you **WilliamSPORT Quality Rope** and **Bourne-Fuller Service**, which means—

In Cleveland—

The most complete stock of Rope in this section—all sizes, all constructions.

In Cincinnati—

All ropes suitable to the industries of the section—haulage, transmission, hoisting ropes, elevator cables, etc.

In WilliamSPORT—

The most modern Wire Rope Factory in America—a self contained unit, drawing its own wire and producing Ropes which are guaranteed to be equal, if not superior, to any rope on the market.

**WILLIAMSPORT IMPROVED PLOW
STEEL ROPES ARE THE STRONG-
EST AND MOST EFFICIENT
ROPES PRODUCED**

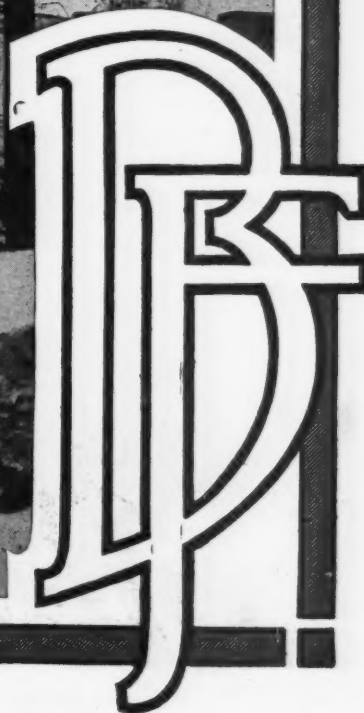
The Bourne-Fuller Co.

Wire Rope Iron Steel Pig Iron Coke
CLEVELAND

Pittsburgh
Detroit

Chicago

Cincinnati
New York



Prompt attention will be given your inquiry if you mention ROCK PRODUCTS

Atlas Explosives

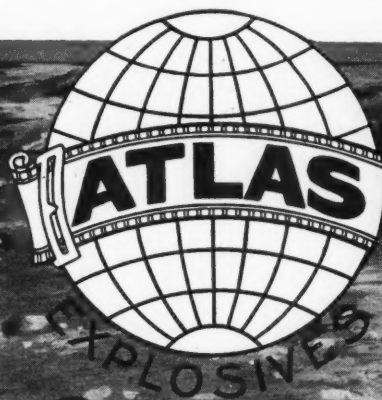
reduce the cost of stripping operations in quarry, mine and road construction work. There are ATLAS Blasting Powders and ATLAS High Explosives especially suited to the economical moving of earth.

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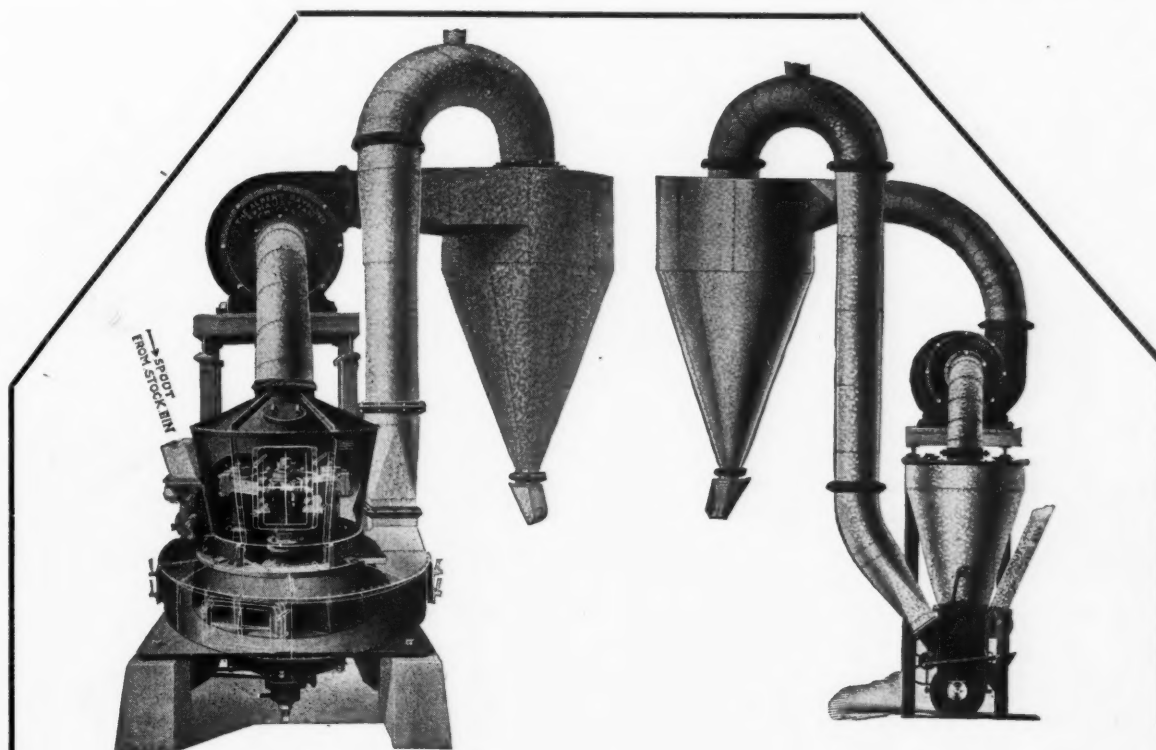


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The JULY 5th Issue of Rock Products

will be the

Lime Convention Report Number

The 1919 Lime Convention will be of real consequence. It will bring a report of the initial year's work of the new association administration.

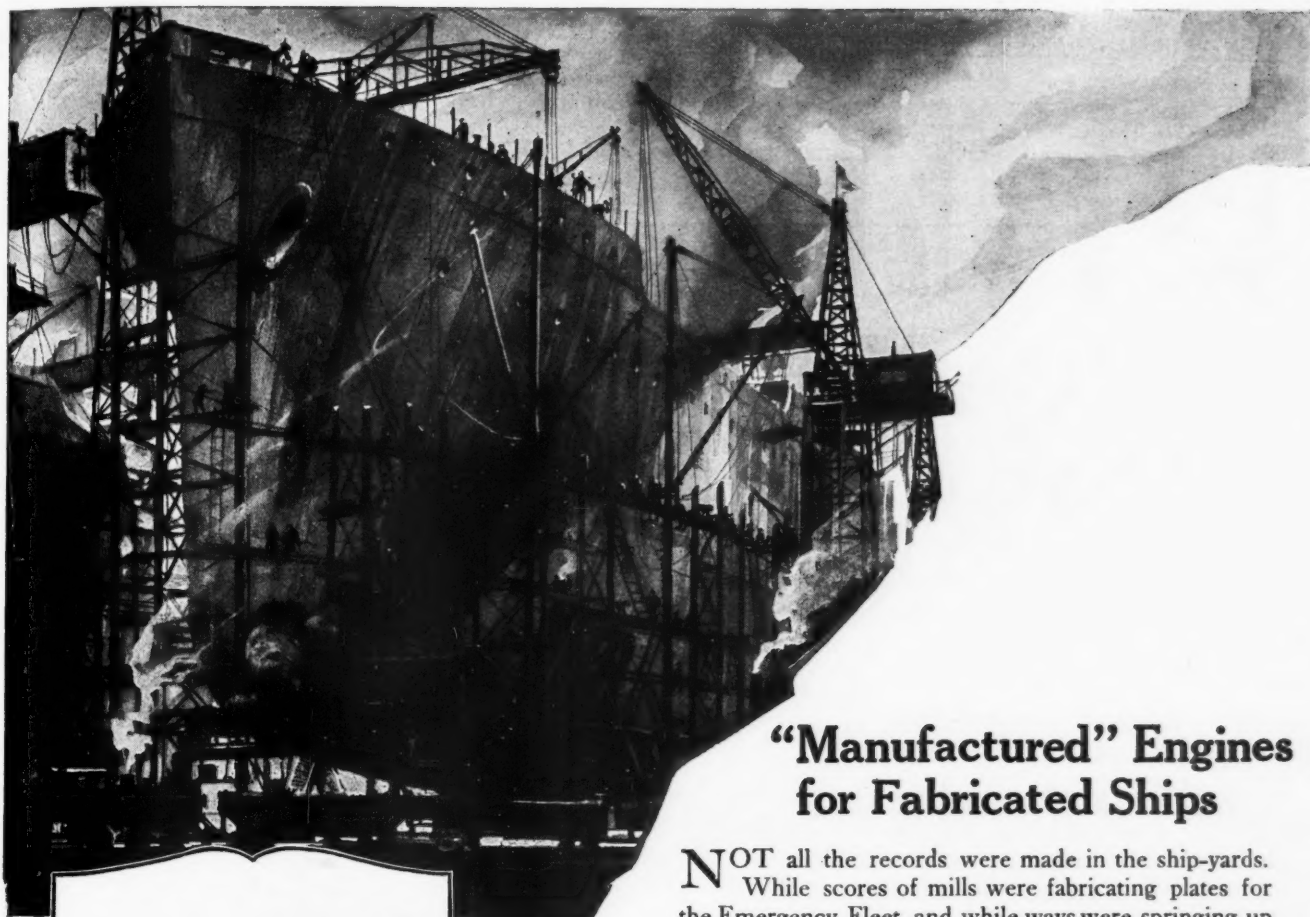
The research department has achieved so much in technical and merchandising branches of the industry that wonderfully constructive information will come to light.

Every lime producer awaits Rock Products' report of this highly important meeting. It will be presented in the July 5th issue—a big, costly number that will be of lasting as well as current value.

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542 South Dearborn Street CHICAGO, ILLINOIS

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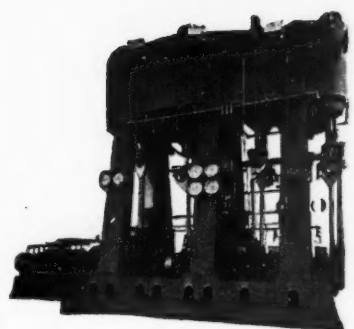
NOT all the records were made in the ship-yards. While scores of mills were fabricating plates for the Emergency Fleet, and while ways were springing up over night, another job, just as vital, was moving just as fast and just as surely through an organization accustomed to emergencies.

In August, 1917, an order was given to Worthington for 50 Marine Engines for the Emergency Fleet. Each engine was of 1400 horse-power, standing 20' 2" high—weighing 143,000 pounds. The first order for 50 engines was followed by subsequent contracts for 132 more—it was the largest order of its kind ever issued. On January 26th, 1918, the first engine was shipped, and thereafter three a week, twelve a month—almost automatically the big engines sprang to completion.

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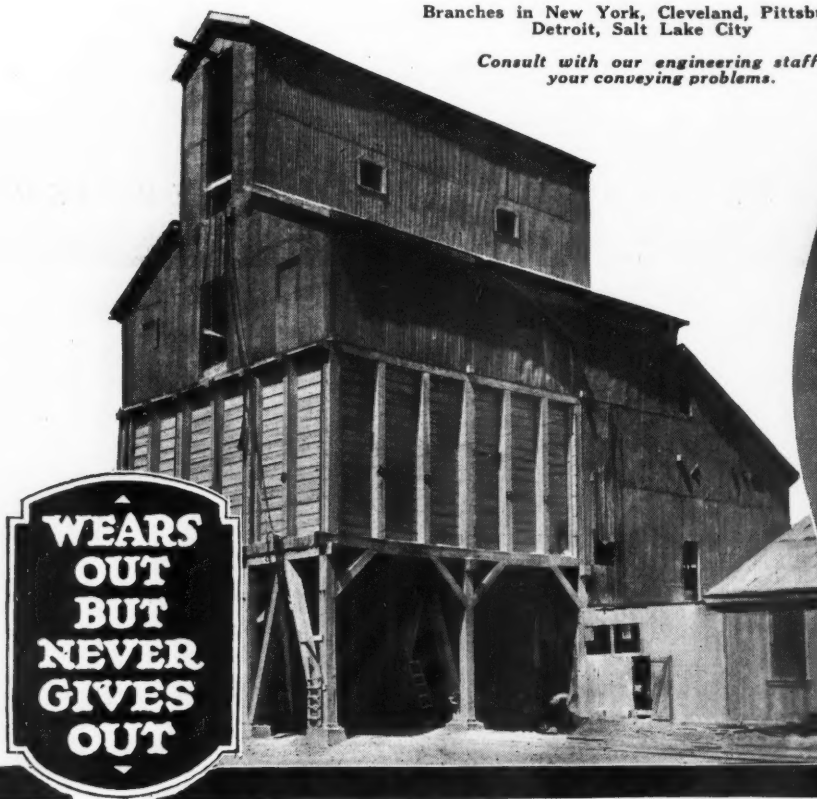
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Rock Products

Vol. XXII

Chicago, June 7, 1919

No. 12

Lime Association Completes First Year With Splendid Record of Service

Great Strides Made Toward Establishing the Lime Industry On a Prosperous Basis
—Increased Advantages to Members Promised

THE ANNUAL CONVENTION of the Lime Association in Pittsburgh on June 18-19 will mark the first anniversary of the reorganized association of American lime manufacturers. Out of a very loose organization, largely held together by ties of good fellowship, a quite remarkable working institution has been builded in the short space of a single year.

Credit for this accomplishment is due not less to the president and directors of the association, who have given generously of their time, energy and brains, than to the general manager and the staff he has assembled to carry out their plans.

The association was fortunate in the selection of its general manager since he came direct from the allied Portland Cement Association and was thoroughly familiar with promotional work along building material lines. However, his work with the Lime Association is infinitely more difficult, which of course makes his accomplishments of this first year the more remarkable.

Lime Promotion Difficult

Portland cement is cement. It is a specific material of construction, and in these days of scientific control of manufacture it matters little to the purchaser from what particular mill the cement comes. With lime the promotion problem is vastly more difficult. There is high calcium lime and there is dolomite lime. There is building lime and there is chemical lime. There is lump lime and there is hydrate. There are about 750 lime plants in the country and of these only about 100 make hydrate.

Obviously, the promotion of *lime* is a complex problem. Much of the promotional work is of benefit only to manufacturers of high calcium lime, much is of benefit only to manufacturers of hydrate. This can and is overcome to a certain extent by tonnage assess-

ments for specific purposes, but even then it is difficult to overcome a certain amount of jealousy between the different groups of manufacturers.

One Great Achievement

Of the big accomplishments of the Lime Association certainly the one which has done the most good to the industry is the stabilization of prices, which has come about largely through the work of the committee on uniform cost-keeping and from confidence in one another and from confidence in the association. Another big achievement was the endorsement given agricultural lime by the Agricultural Advisory Committee. And this was only one of the many things done during the war by the War Service Committee on Lime, which was wholly supported by the Lime Association.

These and many similar things accomplished during the past year have benefited the whole lime industry—members as well as non-members of the Lime Association. But many other things have been accomplished of direct and tangible benefit to members only. These include the placing in the field of several promotion engineers whose work has resulted in weekly confidential reports that have brought the members real business; the establishment of a chemical laboratory and the gathering of information and the giving of expert advice on special uses of lime in the industries, which in some instances has also resulted directly in getting orders.

As the association develops it is only natural that the aim should be to enhance the benefits of members rather than of the industry as a whole. Today two-thirds of the industry is carrying the financial burden of promotional work, which might well be shared by the whole three-thirds.

Ontario Crushed Stone Producers at the Canadian Good Roads Congress

Party Enjoys Three Days' Excursion to Quaint City of Quebec and Gives Macadam Roads a Big Boost

CRUSHED STONE PRODUCERS in the Province of Ontario, Canada, took the occasion of the sixth annual

Canadian Good Roads Congress at Quebec, May 20, 21 and 22, as an opportunity to get better acquainted with one another and to have a little holiday together, incidentally helping the industry to attain its place in the road promotion game.

A party of 13 left Toronto May 20 in a special car via the Grand Trunk Railway, arriving in Quebec the following afternoon. The party included the following: Mr. and Mrs. J. F. M. Stewart, Toronto, of the Point Anne Quarries Co., Ltd.; Mr. and Mrs. C. M. Doolittle, Hamilton, of the Canada Crushed Stone Corp., Ltd.; Mr. and Mrs. W. A. McCaffrey, Toronto, of the Ontario Stone Corp., Ltd.; Mr. and Mrs. Frank Rogers, Toronto, of the Oliver Rogers Stone Co., Ltd.; Charles Lowrey, Queenstown, of the Queenstown Quarry Co., Ltd., John Maloney, Toronto, and Robin Boyle, Toronto, of the Provincial Stone and Supply Co., Ltd. All these gentlemen are directors of the Provincial Stone and Supply Co., and are also the managing heads of some of its various subsidiary corporations as named. As guests of the party were A. P.

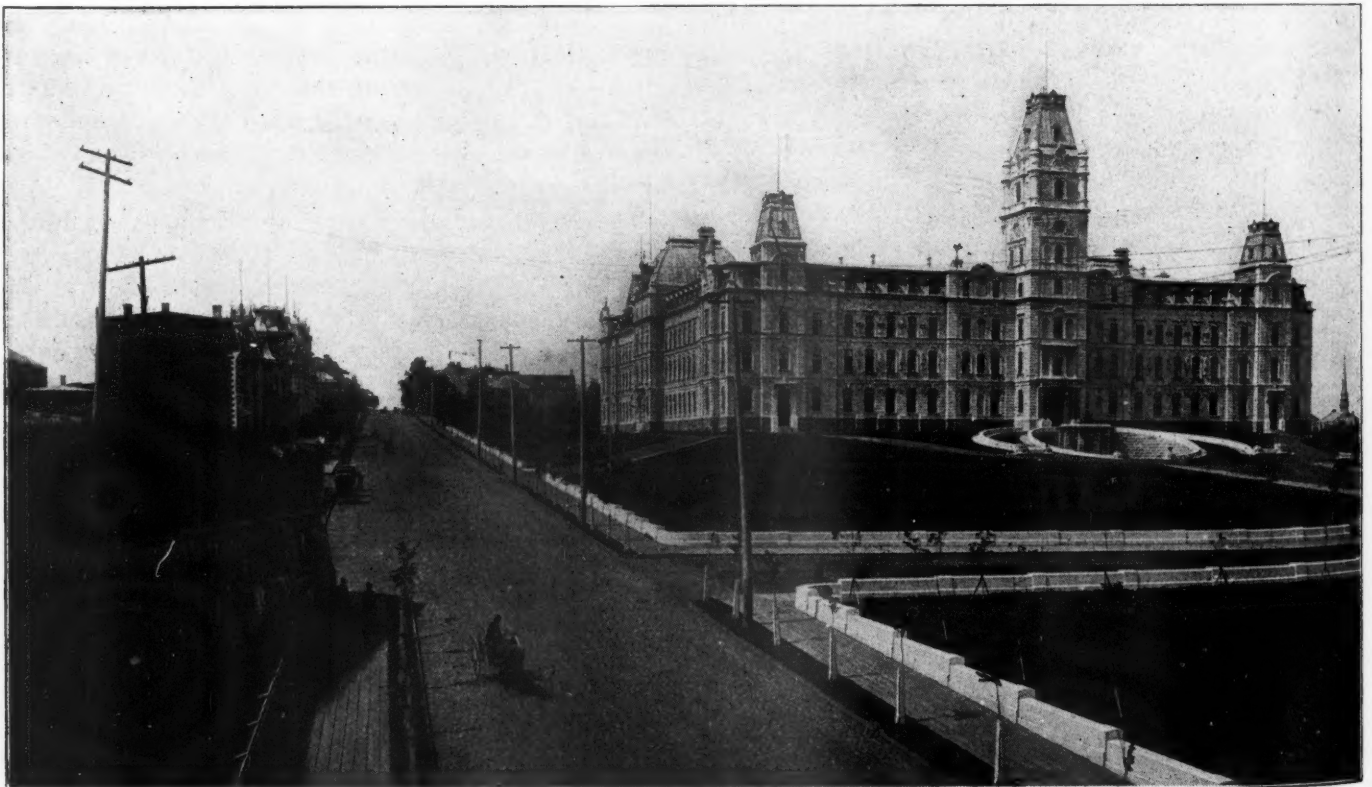
Sandles, secretary of the National Crushed Stone Association, Columbus, Ohio, and the editor of ROCK PRODUCTS.



J. F. M. Stewart



Robin Boyle,
Genial manager of the tour



Parliament Building, Quebec City, where Canadian Good Roads Congress was held

The Provincial Stone and Supply Co., Toronto, is practically an incorporated association, comprising 16 of the principal crushed stone companies in the Province of Ontario. Robin Boyle, one of the directors of the National Crushed Stone Association, is the managing head of this company.

Besides attending the sessions of the road congress in the Parliament Building at Quebec, the party enjoyed several interesting side excursions to the Quebec Bridge, to the Montmorency Falls, and various other points of interest in and near the city.

Ask Freight Rate Reduction

Largely through the influence of this delegation the Good Roads Congress passed resolutions in the form of petitions to the Dominion government, the Board of Railway Commissioners and the individual railways of Canada asking for an immediate reduction in freight rates of 10 cents per ton on roadbuilding materials, pending an investigation to determine the possibility of a further reduction to a pre-war basis.

[By way of explanation it should be stated that Canada followed the United States in freight rate advances. The

same unfair increases were made on mineral aggregates there as in this country.]

The resolution adopted by the Road Congress further pointed out that freight rates on these materials had always been higher in Canada than in the States.

Nearly every type of road and pavement was discussed in detail, but probably none in such a manner as the Macadam type road was handled by A. P. Sandles.

This is perhaps the first time in the history of national road conventions that any group of men has championed the cause of macadam roads.

Remarkable Eulogy on John Louden Macadam, Inventor of Macadam Roads

Secretary A. P. Sandles of the Ohio Macadam Association and the National Crushed Stone Association Treats Our Canadian Cousins with Typical Address

MACADAM ROADS ARE VICTORY ROADS. They helped to make one less Kaiser in the world. In the world war, they held both ends of the line—the Battle Line over there—the Bread Line over here. The meal ticket was the biggest gun in the army and navy. Feed and fight were both absolutely necessary to win the war.

In 1914, the Hun horde poured into Belgium and France. Its mission was rape, raid, rob and murder. It expected but little, if any, resistance. It reckoned its victims unable to quickly assemble arms and armies to repel a foe. But—

"The Dice of God are always loaded."

When the would-be "Kaiser-Gott" sought to hand-cuff the world; when the Hun dream of world dominion was at highest tide; when Democracy and Free Government were hung in the balance; when Christian civilization was put upon the scaffold; when the priceless treasures and triumphs of all the centuries were slated for sacrifice; when mighty nations were shedding rich, red blood; when millions of women and millions of orphans were praying and mourning for loved one; when the world's greatest tragedy was being staged; then the spirit of John Louden Macadam appeared and enlisted with the hosts of right to help them win the fight.

White Flag and Broken Sword

Macadam-Victory roads smote Prussianism and sent Wilhelm into Holland with a white flag and broken sword. Over these victory roads rolled loads of men and guns to halt the Huns at the Marne and at Verdun. These roads met

THE ACCOMPANYING ADDRESS was delivered May 22 in the Parliament Building, Quebec, at the Sixth Annual Canadian Good Roads Congress. Probably no other paper presented received more applause.

This applause doubtless expressed in some degree the popularity of broken stone roads, which for a time were in danger of suffering from the more effective propaganda work in favor of other types of construction.

But now appears on the stage a most energetic and eloquent apostle of Macadam roads, with whom the promoters of other types of construction will most assuredly have to reckon.

the wear and tear of war. They withstood the weight and speed of heavy loaded trucks. They could be quickly repaired and would be better than before. In this work, the American Engineer (Canada and the United States) went to the king row and got home from third.

The Kaiser and his Huns curse Macadam and defeat. In the coming years, grand-children will tell the tale of how the roads of France helped the allies to hit the Hun and win the war. Posterity will owe and pay tribute to Macadam-Victory roads and hail them as a blessing to mankind.

Blazed a New Trail

Under the folds of Britain's flag was rocked the cradle of John Louden Mac-

adam. He was the father and the founder of Macadam roads. The vast domain of British Empire can well be proud of this illustrious citizen who climbed to a lofty place among the sons of men. He blazed a new trail that nations and progress have followed. Wander where you will, in the world, if civilization is there, Macadam roads are there. Yonder, across the border, John Louden Macadam has hold of the four corners of my country, the United States, and is lifting us out of the mud and mire. "His body lies moldering in the grave, but his soul is marching on."

Mr. Macadam—A Useful Man

Mr. Macadam was Road Commissioner of Scotland for fifteen years—from 1783 to 1798. Before this time he visited America. After this time he began working out his "Macadam Plan." Those eminent highway engineers, Arthur H. Blanchard and Henry D. Drowne of Columbia University, New York City, say in their text book on Road Making:

"Macadam was the first man to recommend a broken stone surface of very small size stone for public roads. Other great engineers helped him to work out and demonstrate the success of his method. He proved there was great difference between a loose stone road and a perfect Macadam Road."

As a tribute and monument to a useful man, the world has builded more miles of Macadam type roads than it has of all other types combined. The "Macadam Plan" was the result of years of study and experiment by a man who devoted his life to this work. His plan has worn well for a century. The novice or amateur road builder who presumes

to discredit this noted road maker, gets but little applause. Macadam type roads appear in different forms, wearing different surface-coats, to meet the needs of modern travel. Mr. Macadam is the man who helped us to jump from ox-cart to tin-lizzie and from mud-boat to motor truck. He is the man who clave back the darkness and beckoned us to our place in highway transportation today.

Signed Before Breakfast

Macadam roads are the most used and most abused of any form of highway improvement. They are usually built and then murdered. Lack of maintenance is a crime and a disease. If there is any one place where the old adage, "A stitch in time saves nine" fits best, it is in the care and repair of roads.

The good road secret is "Macadam and Maintenance." When our over-seas fighting lads were marching to meet or overtake the Hun, they had both feet on Macadam-Victory roads. These world-war veterans will go on the witness stand and testify that the Macadam and Maintenance road program over there made the Hohenzollerns sign the armistice before breakfast and sign the peace treaty as it is written in the language of John Louden Macadam and the Republic of France.

Legend Over the Door

No permanent road is made. Such theory violates natural law. Mountains slowly but surely wear away. Petals of the rose fade and fall. Everything, animate and inanimate, has its zenith. Then come decline and decay which forever play a part. This natural, immutable law never has been and never will be repealed. It is in force on every mile of road that has been or will be made. Until the sun is cold, this law will hold. In days long gone, a King inscribed over his castle door this legend: "Even This Will Pass Away." In his sadness, the legend was hope and cheer. In his gladness, it was a caution and a half on revelry. Kings and castles pass away, but the law of the legend, over the door, like Tennyson's Brook, goes on forever.

He, who proclaims "permanent roads," should commune with nature and learn the error of his ways. The roads of Rome, the Appian Way, the roads of Caesar in France, were built of stone centuries ago and are wearing yet. They more nearly approach permanence than any structure ever built by man.

Constantly newspapers record the fact that the so-called permanent roads fail to meet the test of time, speed, modern loads, and weather. No matter what the type of road, the patrol man must be on the job if the road is to be kept at 100 per cent every day into the year.

Mr. Macadam won a victory, when he invented a road such that repair would strengthen its wearing capacity and add to its power of resistance. He wisely avoided a type of construction, on which repair would be a weakness. He had in mind quick mending, no traffic delay, and small cost. Macadam builded better than he knew. The fame and name of this uncrowned king reaches round the world. After a century of time, the ways and wisdom of this great engineer, still umpires more miles of road making than all the others combined.

The Judge's Sermon

God made no mistake, when he hauled and unloaded stone in convenient places for the use of man. Macadam knew this. He used material near at hand. Macadam is the natural cure for mud roads and bad roads. The supply of material will never be exhausted. Maintenance is the secret. One of the distinguished jurists and judges of Ohio has aptly said, "to neglect to build good roads is a blight on a nation, but to neglect to maintain them is inexcusable and a criminal waste of public property."

Hats Off to the Engineer

Roads must be well built. Ignorant, careless or fraudulent construction robs the public pocketbook. Brains in the engine room of the engineer, honesty in his heart, and full knowledge of road-making, will make this official a public benefactor. Hats off to him who makes the blueprint and writes the specifications which guide the workman in building and erecting great structures. The Highway Engineer must know his business and have the courage to umpire his game. He is a power house. His office must be beneath his own hat. A public policeman ought to be on the job to insure faithful performance of contract. If this safeguard is neglected any and every type of road will be a disappointment.

Danger and Damage

A crown on a road is worth more than a crown on a Kaiser. Drainage is the corner-stone of roadmaking. Drainage is life insurance to the roof and root of the road. Surface drainage is essential. Foundation drainage is the alphabet of every road improvement. Maintenance is the father and mother of good roads. Mud-holes are cancers. Road-ruts a disease. Dust a pestilence. Breaks and cracks mean danger and damage. The patrol man and surface treatment are safety-first money savers. Some day we may build road vehicles so that rear wheels are wider apart than the front wheels. This will distribute the weight and wear of loads over a

greater surface and lessen the chance of rut making.

The Secret

The Good Road Secret is "Macadam and Maintenance." Macadam means more miles and more service to more people for the money invested. Nations of Europe, after centuries of experiment and experience build Macadam Roads. Mileage is popular. Rightly built and repaired without delay are the pass word and countersign.

The Road Dollar

The business of road officials is to spend money, not to save money. They should make supreme effort to give the taxpayer value received for every road dollar invested. They should build roads for the benefit of road users and not for the purpose of making any man or set of men rich. Material men, contractors and politicians are entitled to a square deal and nothing more.

Handcuff Graft

The good road sentiment is a tidal wave. It must be honestly and intelligently met and answered. If at any time or place, there is greed, grab or graft in road-making, it should be hit and hit hard. Road officials will do well to be wary of the fellow who wants to show them a good time. That fellow expects to grind his own ax and chop his own wood with it.

Excess profit should be hand-cuffed. If any set of men attempt to manipulate underground wires to make enough profit on one job of work in one road-building season, to enable them to retire and live at ease the rest of their natural life, they should be straight jacketed and the contract held up until honesty and square dealing can be written into the records of the road improvement. Road officials should give these shysters and shylocks a publicity shock and a chance at hard labor.

Mud Road Hell

Bad roads lessen religion and increase profanity. The man who must live on a mud road all his life, won't have any fear of hell. He will be used to it. Bad roads induce farmers to leave the farm. Mud-roads for the many and joy-ride boulevards for the few is hardly a healthy national road policy. The hope of a good road should reach as far as the flag reaches. The hope of a good road should reach to every home that gave a son or helping hand to win the war. The hope of a good road should reach the farm as well as town and city. There should be system. Main highways should be established. Co-operation between units or divisions of government should be the rule in road mak-

ing. This will avoid patch-work and crazy-quilt, disconnected road building. But, the meal ticket growers should be neither neglected nor forgotten.

Dollars and Sense

John Louden Macadam intended that road building should have an economic value. Farm and food highways will give the consumer more crop for his dollar and give the producer more dollars for his crop. This double-gear gain offsets and pays off the road tax. The shortest distance between producer and consumer is a good road from farm to market. Investigation discloses the fact that the average yield of fields increases when improved highways are built into an agricultural community. The good road does social uplift work. School, church and government improve under influence of a modern highway. Again, these blessings offset and pay off the road tax. The good road is Dollars and Sense. This means common sense, not copper cents.

How can everybody have the hope of a good road? How is the farmer to be served? How will rural folks be reached? France and other nations of Europe have answered these questions. Boil the story down and the answer is made in three words, Mileage, Macadam, Maintenance.

Meal Ticket Roads

In Ohio, my home state, the average cost of roads, per mile, sixteen feet wide, in 1918, as shown by the records in our State Highway Department was as follows:

Water-bound Macadam	\$16,000
Bituminous Macadam	19,000
Concrete	31,000
Re-inforced Concrete	32,000
Brick—Stone Base	38,000
Brick—Concrete Base	51,000

There were war prices. The average Ohio prices, before the war, 1914, were:

Water-bound Macadam	\$ 8,627
Gravel Macadam	8,365
Bituminous Macadam	11,064
Concrete	14,227
Brick	20,982

As a rule macadam roads are wider than either brick or concrete. This should be kept in mind in comparing general cost prices. While the allied armies were going to the front over macadam roads, the meat-wheat meal-ticket was going to the front over hard-top highways over here. Mr. Macadam was a blessing at both ends of the line. We must have road mileage without bankrupting the public money-box.

The Motor Truck—A Crusader

War is hell, painted red. When war came, railroads failed to meet the crisis. The throat of traffic choked. Terminals clogged. Freight congested. Huns laughed and rejoiced at our predicament.

Again, "The Dice of God were loaded." The motor truck appeared a savior. Brains, mixed with lightning and gasoline, make wonder wagons. The motor truck became an engine of war. Day and night it delivered millions of tons of freight and armies of men, on time at the right place. The world knows that the motor truck was a crusader in the world war. The world knows that the motor truck would have been helpless without the hard-top road. John Louden Macadam began one hundred years ago, to build Victory Roads that were to humble the haughty Hun and make the Kaiser run from Hunland to Holland. "God moves in a mysterious way,



A. P. Sandles, Secretary Ohio Macadam Association, National Crushed Stone Association

his wonders to perform." Roads are the scaffolding by which nations are builded up and saved, when they have to be saved.

A Short Sermon

Macadam, Mileage, and Maintenance make possible the following editorial comment in *Colliers' Weekly*:

"Auto-passenger mile service is greater than all our railways combined, and greater than all our electric traction service. It is almost equal to steam and trolley passenger service combined. The ton-mile service of the commercial motor vehicles compares favorably with railway shorthaul freight."

Macadam, Mileage, and Maintenance will make the motor truck even more useful in peace than it was in war. In one Ohio county are 900 miles of Macadam roads. Eighty-five per cent of its people live on or within half mile of a hard top road. The engineer resurfaced old road beds and saved tax payers \$11,000 per mile. It is economy to save

old road beds where possible and reasonable.

The Red Rag Flag

In the United States, farmers are leaving the farm. This was true before the days of war and abnormal wages in shop and factory. As Secretary of Agriculture in the State of Ohio, I asked 4,200 farmers by letter, to give me their reason for this folk-flow from farm to city. The answer that outnumbered all the rest was, "Bad roads or Mud roads." No nation can go on forever jamming its population into sky-scrapers, city flats, tenement houses, and centers of population. High cost of living is no accident. Good roads will help to keep farmers on the farm. This is safety first. Bolshevism does not flourish on the farm. The Red Rag Flag gets no applause or color bearer among country folks. The red-light danger signals flash their warning from the city, not from God's great out-of-doors.

Safety First

The biggest men, the best minds, and the ablest statesmen must hold the helm on the ship of state, if great nations are to endure. Your country and mine will be most secure and content, if we do those things that will keep a normal percentage of our people outside of the city. Again, Macadam, Mileage and Maintenance are the panacea. Roads for the many, not alone for the few. Good roads are never a menace. Good roads cost less than bad roads.

The North Sea Picture

Macadam-Victory Roads made thrones crumble and crowns tumble. John Louden Macadam helped to paint the picture of Hun battleships in the North Sea floating a white flag and surrendering Germany's sea power forever. Macadam helped to write the greatest chapter in human history and in human liberty. Macadam has set the makers of geography to the task of re-charting the world.

Dedicate Victory Roads

It costs more to live today than ever before, but it's worth more to be living now than ever before. The peace treaty and the League of Nations will not settle all questions, but they will settle the Huns. Britain, France and the United States have not always drunk from the same canteen, but when we fought together on the fields of France and Flanders we forged a mighty link in friendship's chain, which I hope will be broken never. We dedicated and consecrated Madam-Victory Roads to peace on earth and to the brotherhood of man. In lands where God and the Golden Rule hold sway, there the name of John Louden Macadam will be lauded and applauded forever.

Recent Decisions on Quarry Operation

Involving Employer's Liability for Accidents to His Employees

AN EXPERIENCED powder man in a granite quarry set off a blast in three holes in a sheet of granite. By the blast the stone was separated from the quarry to some extent, leaving a seam between the solid wall and the stone intended to be removed. After the blast the foreman examined the result and ordered the powder man to make a seam blast. While the powder man was engaged in making the seam blast and inspecting the tamping and the powder to see if the exploder was all right the stone, being on an incline or slope, moved and the powder exploded, causing the injuries complained of. The complainant alleged the negligence of the operator in not furnishing him with a safe place in which to perform his duties and in not furnishing him with a competent fellow servant. The proof shows that the foreman had worked for the operator for a long time and had never been guilty of negligence or incompetency before, and there was nothing tending to show any circumstances in connection with the alleged negligent act in failing to make proper inspection from which it could be inferred that the foreman was incompetent, and in such state of the evidence it was error to submit the question of the foreman's incompetency to the jury as it confused the real issue in the case.

Barclay v. Wetmore-Morse Granite Co. (Vermont), 102 Atlantic 493, p. 495.

Operator's Knowledge of Dangerous Condition—Negligent Order to Employee

If by an inspection made by a foreman in a quarry the operator knew, or in the exercise of due care ought to have known of the dangerous condition existing, and then ordered an employee to make a seam blast, the employee not having knowledge of such dangerous condition equally with the operator, the operator is liable for injuries resulting to the employee.

Barclay v. Wetmore-Morse Granite Co. (Vermont), 102 Atlantic 493, p. 495.

Negligence of Foreman—Fellow Servant Rule Not Applicable

A foreman in a quarry was acting as and for the operator in making an inspection of the quarry after a blast and in giving an order to a powder man to make a seam blast. In such case the foreman is not a fellow servant of the powder man and the fellow-servant rule is not involved.

Barclay v. Wetmore-Morse Granite Co. (Vermont), 102 Atlantic 493, p. 495.

Duty of Operator to Inspect—Question of Fact

By a blast in a stone quarry the stone was separated from the quarry to some extent, leaving a seam between the solid wall and the stone intended to be removed. After the blast was fired the quarry foreman went to the place of the blast, examined the result of the blast, and ordered an employee to make a seam blast, and to hurry, as the men were waiting for it. The foreman inspected the situation, and on such inspection gave the order to make the blast. Under the circumstances it was a question of fact for the jury whether, under proper instructions by the court, it did not devolve upon the operator to make a reasonable inspection of the situation before ordering the second blast.

Barclay v. Wetmore-Morse Granite Co. (Vermont), 102 Atlantic 493, p. 495.

Duty of Operator to Inspect—Assumption of Duty Performed

Where it is the duty of a quarry operator to inspect the condition after a blast in a quarry, an employee is justified, in the absence of knowledge or information to the contrary, in assuming that the operator has performed his duty fully in this regard and to rely upon it without inspecting for himself.

Barclay v. Wetmore-Morse Granite Co. (Vermont), 102 Atlantic 493, p. 495.

Duty of Employer—Risks Not Assumed by Employee

An employee in a quarry does not assume the risk until after the operator has exercised ordinary care to furnish him a reasonably safe place and safe appliances in which and with which to work. An employee does not assume the risk until after the operator has exercised ordinary care to furnish him a reasonably safe place and safe appliances in which and with which to work. An employee does not assume risks until the employer has used reasonable care to avoid them.

Pringle v. Carthage Quarry Co. (Mo. App.), 199 Southwestern 561, p. 563.

Assumption of Risk—Pleading and Proof

In an action for the death of an employee while working in the line of his employment in a quarry, the employer may prove the defense of assumption of risk under the general denial.

Pringle v. Carthage Quarry Co. (Mo. App.), 199 Southwestern 561, p. 562.

Risks Not Assumed

An employee in a quarry did not assume a danger that was created by the act of his employer in exploding dynamite which the employer knew was likely to throw rocks to the place where the employee was killed, when the employer knew of the employee's position.

Pringle v. Carthage Quarry Co. (Mo. App.), 199 Southwestern 561, p. 563.

Dangerous Condition—Duty to Warn Employee

An employee acting as a powder man in a quarry has a right to depend upon the operator, he being present by his agent, a foreman, directing the work, and the powder man has the right to presume that the operator, through his agent or foreman, would warn and save him from needless exposure to injury.

Barclay v. Wetmore-Morse Granite Co. (Vermont), 102 Atlantic 493, p. 495.

Injury to Employee—Opportunity to Reach Place of Safety

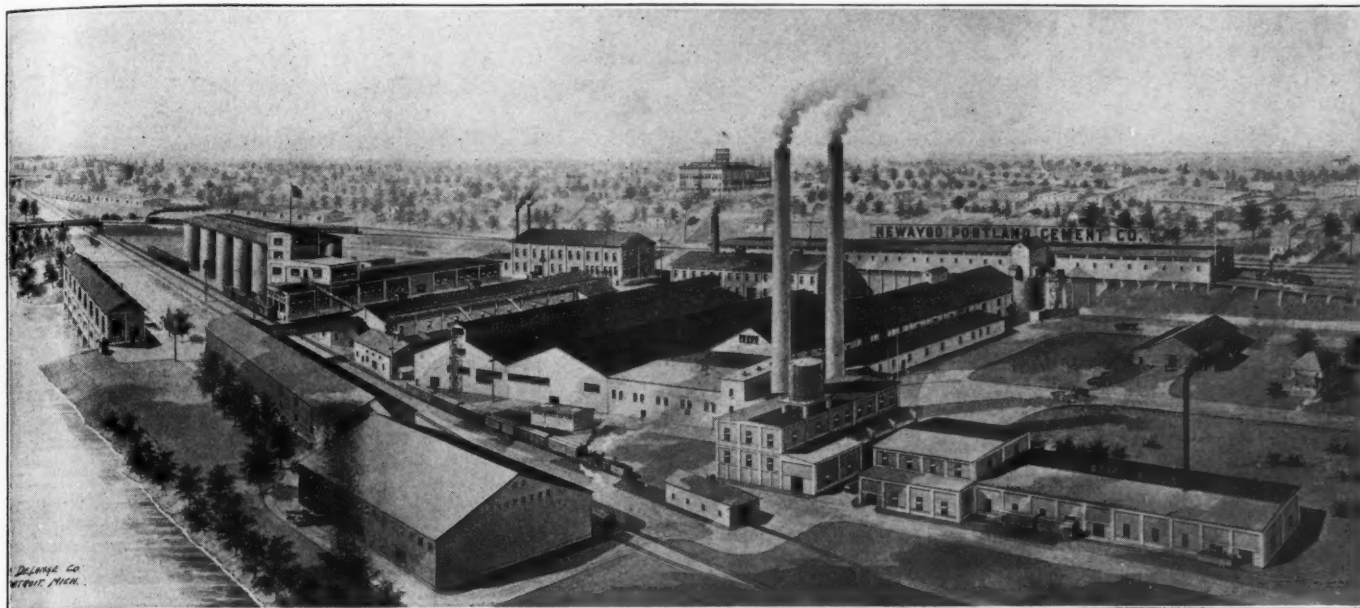
In an action for the death of an employee in a quarry caused by his being struck by rock thrown by an explosion, if the shot was fired when the employee was driving his team with his back to the shot or before he had time to make observations for his safety after he stopped his team and the foreman knew where the employee was at the time the shot was fired, then the question as to whether the quarry operator gave the employee sufficient time to reach a place of safety was comprehended within the issue submitted as to whether the operator knew, or by the exercise of ordinary care could have known, that the employee was likely to be struck by rocks thrown by the explosion.

Pringle v. Carthage Quarry Co. (Mo. App.), 199 Southwestern 561, p. 562.

Willful Operations—Liability

A landowner brought an action against a railroad company for damages arising out of blasting operations conducted by the railroad company in its quarry near the lands of the complainant. Under the pleadings it was proper to instruct the jury to find for the plaintiff if from the evidence they concluded that the conduct of the railroad company in carrying on its blasting operations was done willfully and wantonly.

Cobb v. Atlantic Coast Line Ry. Co. (North Carolina), 95 Southeastern 92, p. 93.



Plant of the Newago Portland Cement Co., Newago, Mich., showing potash-recovery plant in the foreground at the right

Most Recent Development in Cement-Plant Potash Recovery

Newago Portland Cement Co. Has Several Original Features—One of the Last Cement Plant Installations Under War Conditions

SINCE THE SIGNING of the armistice, and the uncertain future of the American potash industry has become so apparent, the interest in potash recovery at cement plants has waned considerably. During the year 1918, however, great strides were made in the cement industry in the way of potash recovery and it is to be regretted that the future of this branch of the industry should be threatened and progress arrested, even if only temporarily.

One of the last cement plants to install a potash-recovery system under war conditions is the Newago Portland Cement Co., Newago, Mich. This plant was designed to produce a very high grade product which is especially adapted for the chemical industries and on this account will doubtless prove a profitable investment even in the face of foreign competition.

Richest Raw Materials

The raw materials used to make Newago cement are claimed to run the highest in recoverable potash of those used at any cement mill in the United States. This is 1.55 per cent of potash salts. Shale and limestone are the ingredients, the shale running as high as $4\frac{1}{2}$ to 5 per cent potash.

The wet process of cement manufacture is used. The kilns are 9 ft. in diam-

eter by 180 ft. long. The average temperature of the kiln gases is reduced to 400 deg. F. before applying the Cottrell method of potash recovery.

Gas Taken Direct from Kilns

In some of the older plants the kiln gases are recovered after they have entered the stacks. At the Newago plant the kiln gases are taken direct from the end of the kilns and are by-passed around the stacks in rectangular concrete flues, as shown in the accompanying views.

Before entering the Cottrell electrical

precipitator the gases are passed through a spray of cold water, which reduces their temperature to about 400 deg. F. and removes the coarser materials, such as ash.

The Cottrell precipitator is built of reinforced concrete in three units and operates at 100,000 volts. The liquor discharge runs to a sump, from which it is pumped to a Dorr thickener 36 ft. in diameter and 11 ft. high.

De-Watering the Sludge

The Dorr thickener removes about half the water in which the flue dust has been recovered. From the Dorr



At right is building which houses Cottrell precipitators; at left the Dorr thickener

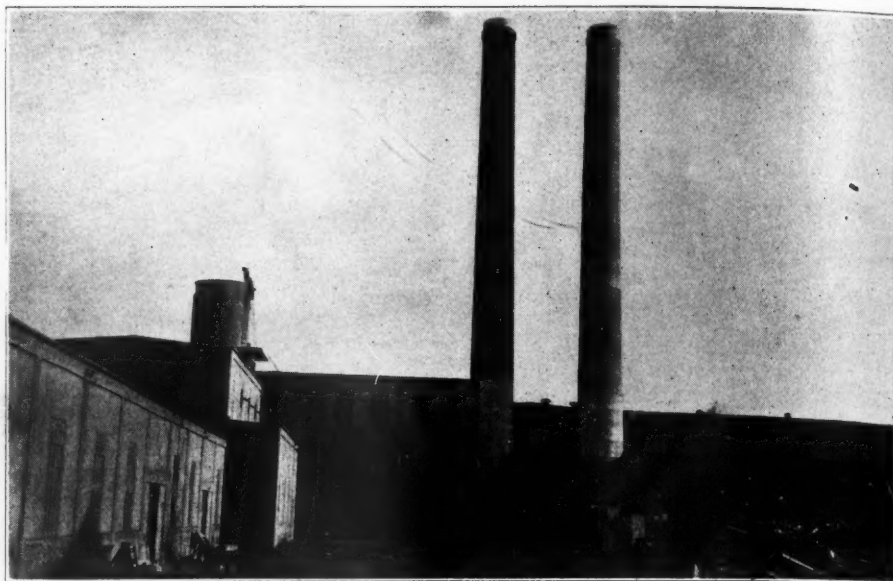
thickener the liquor is drawn off to evaporating pans, while the sludge is drained to a sump, from which it is pumped to two Oliver filters.

The filters reduce the moisture content of the sludge to about 34 per cent. The liquor, or filtrate, is pumped to the evaporating pans, while the sludge is scraped off the filters to be re-used in the kilns.

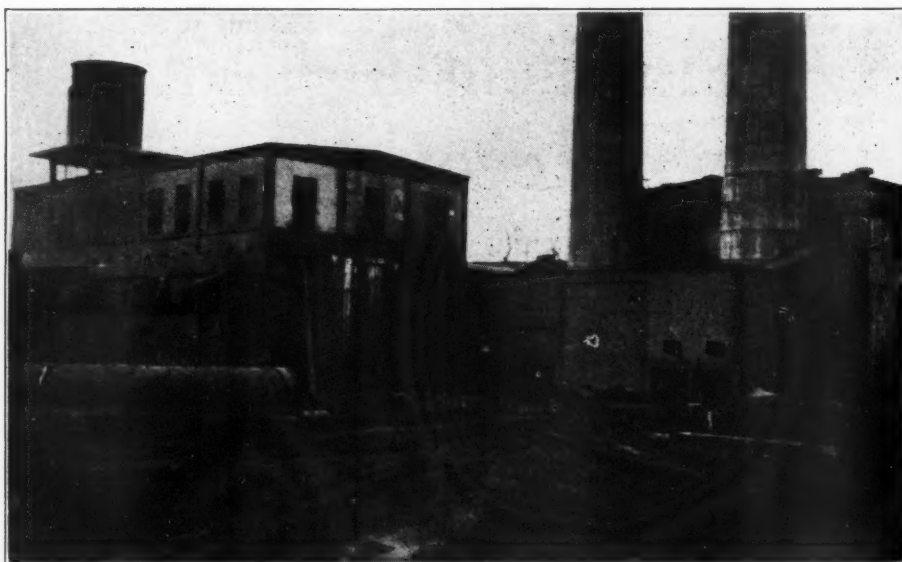
Sludge Returned to Kilns

When the dewatered sludge or filter cake leaves the filters it falls into a collecting trough from which it is removed by a screw conveyor and taken to an adjoining pug-mill. Fresh water is added and the sludge is remixed to the consistency of the slurry used in the kilns.

By means of an air-lift pump in the filter house, this sludge or slurry is



General view showing connection between kiln and potash-recovery buildings



Stacks with by-passes for kiln gases and chamber for spraying gases with cold water before treating in Cottrell precipitators

pumped back into the kiln feeds, thus preventing the loss of any potash which could not be recovered from the filtrate. The potash content of this sludge runs as high as 3.59 per cent. It is, of course, again volatilized in the kilns and a part is recovered in the next trip through the recovery system.

The other contents of the filter cake are silica, 33.72 per cent; iron and alumina, 34.94 per cent; lime, 7.8 per cent; sulphur trioxide, 12.59 per cent; magnesium oxide, 1.03 per cent.

About 15 tons of flue or kiln dust is treated per day, of which 12 tons is returned to the kilns in the form of filter cake.

The evaporation of the liquor carry-coal being used for firing. The circulat-

ing liquor carries about 45 per cent of potash.

Evaporation is done in two stages. Experiments have also been made with centrifugal dryers.

A sample of the average salt recovered is as follows: Silica, 0.36 per cent; alumina and iron, 2.69; ferric (iron) oxide (Fe_2O_3), 0.03; lime, 2.53; sulphur trioxide (SO_3), 14.62; chlorine, 23.40; and potassium oxide (K_2O), 41.42 per cent.

Plenty of Electricity

The Newago Portland Cement Co. enjoys the rather unusual advantage of a surplus of cheap electricity. The company has its own very modern and well equipped hydro-electric power plant, which furnishes all the motive power for



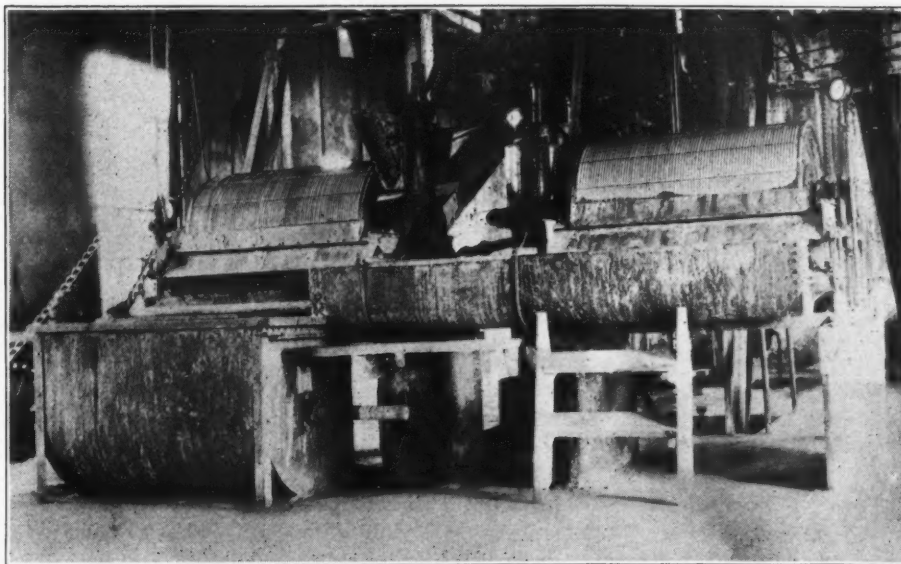
Concrete by-passes around kiln stacks

the mill and the current for the Cottrell precipitator, and still leaves a larger surplus than the small city of Newago can use.

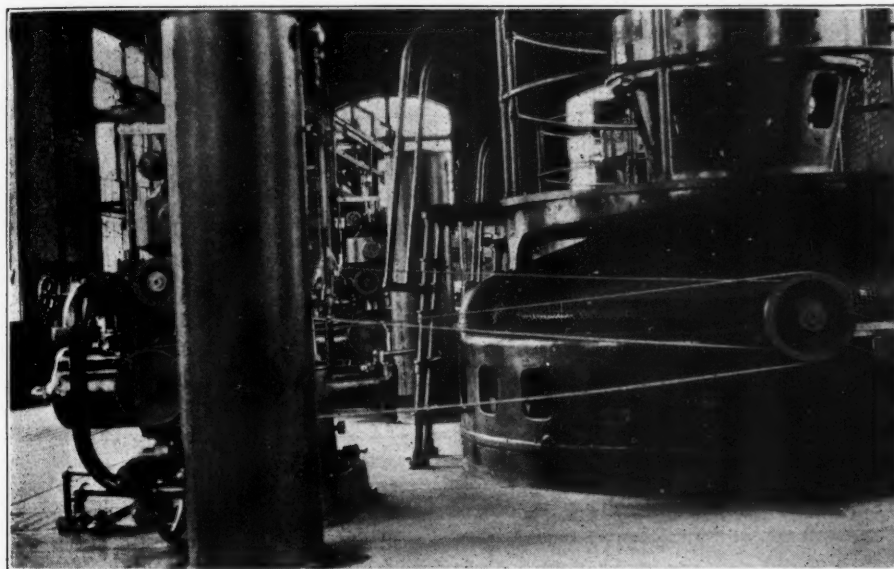
Designers and Builders

The vice-president and general manager of the company under whose supervision the potash-recovery system was installed is J. B. Jonn. The chief engineer of the company, to whom credit for many details is due, is L. E. Smith. F. S. Moon was the engineer representing the Western Precipitation Co., of Philadelphia, which installed the Cottrell electrical precipitation.

The raw materials from which Newago cement is made are purchased from the Petoskey Stone Co., which operates quarries and crushed stone plants at Petoskey in northern Michigan. The crushed stone and shale are brought by rail a distance of about 90 miles.



Oliver filters, sludge trough and pug mill

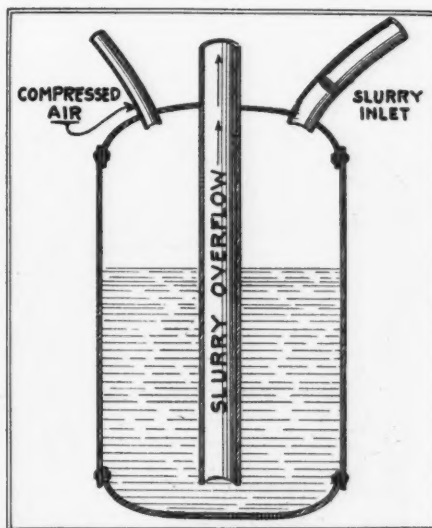


Electric power plant showing new vertical generator units

Canada Cement Company Is Building Big Potash By-Product Plant

TORONTO, CAN.—The Canada Cement Co., of Port Colborne, is erecting a half million dollar plant at Wexford, Ont., for the manufacture of potash. The scheme has been under consideration for the past three years, but it was only recently that actual decision was reached to build the plant. It is planned to have the plant ready for operation in the coming autumn.

The Port Colborne plant of the Canada Cement Co. Ltd., is known as Plant No. 8. It is a dry process plant with 4 kilns 9x150-ft., producing 3,000 bbls. per day. S. R. Preston is general superintendent. The general offices of the company are in Montreal, Que.



Air-lift pump for pumping sludge or slurry back to kilns

Construction Costs Will Be Higher in 1920

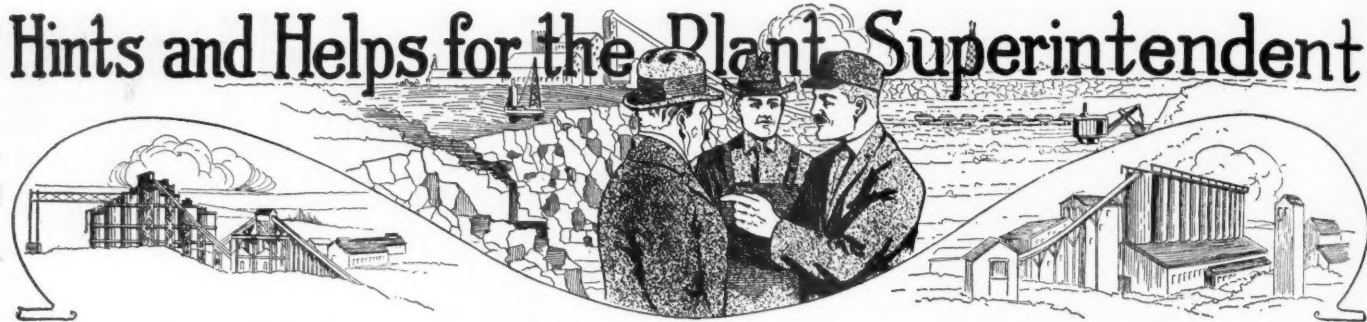
WILL THE COST of construction be more or less in 1920 than it is this year? This important question is daily being put up to building material dealers by those who are interested in building operations, says Tomkins Brothers' Trade Review (Newark, N. J.). Viewing the existing situation in the light of 1919 conditions instead of looking backward four or five years, the analysis does not seem difficult.

In the first place, high wages mean high cost of production; and high wages are brought about by a shortage of workmen. That is just what we will have next year, and the reason is not difficult to see. For four years our immigration has been practically at a standstill. Before the war we were getting about a million immigrants a year from foreign shores. Considering that half of these were laborers, we are at least two million workmen short of normal.

On top of this shortage, the U. S. Department of Labor reports that about a thousand foreigners a day are now sailing for their own countries in Europe. It will be several years before the tide of immigration turns our way. This means that when business gets into full swing we will not have enough workmen to fill available positions; and that is the kind of condition that makes high wages.

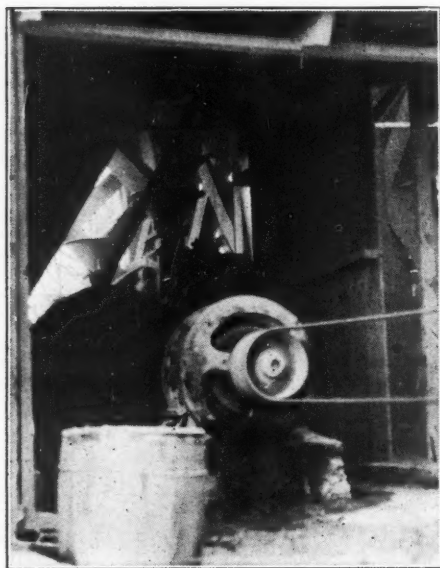
If this proves true, it will cost more to build next year than now. After the close of the Civil War in 1865, it was not until 1878 that prices got down to pre-war levels. But business did not wait thirteen years to go ahead, and it will not do so now. Builders are beginning to realize this fact, and a vigorous revival of much needed construction work is seen on the horizon.

Hints and Helps for the Plant Superintendent



Common Safety Hazard

THE ACCOMPANYING VIEW shows one of the commonest safety hazards about nearly all plants in the rock products industry—an unprotected motor. Very often, as in this case, the motor is in a passage way or so located that one has to squeeze by it in going



Unguarded motor drive

about the plant. A simple railing would be insurance against an almost certain accident sooner or later.

When Ordering Revolving Screens

REMEMBER that the size of perforations in a revolving screen will give a product of smaller size than the perforation itself. The difference in the size of stone that will pass given size ring (by hand) and the same size hole in a revolving screen is due to the angle of the screen plate where the stone passes through. For example, if specifications require stone of a certain size, it is understood that the cubes are to pass a given ring by hand; therefore, in ordering revolving screens for a certain sized product a reasonable allowance should be made to compensate for the difference in the size of material that will pass a ring by hand and the holes in the revolving screen.

Boulder Blasting Hints

A GOOD MANY MEN are afraid to blast boulders near buildings. True, rocks do fly when blasted, but the secret of safety is to avoid excessive charges.

I will describe how I recently broke up a large boulder which was imbedded in the ground about 5 feet and which was located about $1\frac{1}{2}$ rods from a barn. It measured 6 ft. by 10 ft. by 5 ft. The latter dimension was the thickness.

With a spade I dug narrow tunnels; one to enable me to place a charge directly under the center of the stone; the other two about 2 feet from each end. The center charge consisted of 25 pounds of 40% dynamite, the end charge $12\frac{1}{2}$ pounds each—50 pounds in all. I placed two electric blasting caps in each charge.

The secret of success in either boulder or stump blasting is tight tamping and

good resistance. After placing my charges in the holes, I tamped them very tightly with wet clay, being especially sure to leave no air spaces around the dynamite. Then as the ground was rather dry, I poured water all around the stone, because wet ground offers better resistance than dry soil.

The three charges were connected up together by means of the blasting cap wires and the charge fired with a blasting machine.

The shot broke up the stone so well that all but one piece could be easily handled. That was broken up by a mudcap charge. The stone was all used later in making concrete.

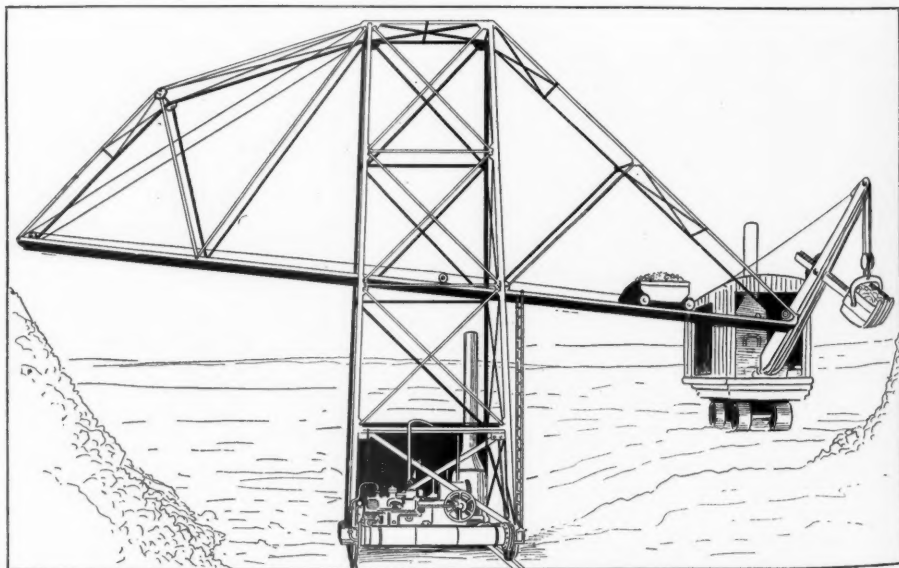
The cost was about \$13 for explosives and \$5 for labor. The work required about eight hours' time of one man.—By M. C. Potter, Iowa.

Another Stripping Device

THE ACCOMPANYING SKETCH shows a quarry-stripping machine in use by an English gypsum plant. The traveling bridge with its dump car carries a steam boiler, hoisting engine for operating the car and an air compressor for operating small hand-hammer drills.

A broad-gauge track gives stability to the structure.

The suggestion is given here for plant operators to think about. A homemade timber structure with possibly a belt conveyor in place of the car might be constructed at small expense and would probably serve the same purpose to better advantage.



Stripping device said to have been used with success in an English gypsum quarry

Cement-Packing Plant With Traveling Bag-Packer

AN INTERESTING cement-packing plant is that of the Adelaide Cement Co., Birkenhead, South Australia, which was described to the editor of ROCK PRODUCTS recently by Wm. A. Maddern, civil engineer, of Adelaide, South Australia—a recent visitor in Chicago. This plant was completed last fall and has been in successful operation for a number of months. Mr. Maddern is the engineer who designed the plant.

Push Conveyor

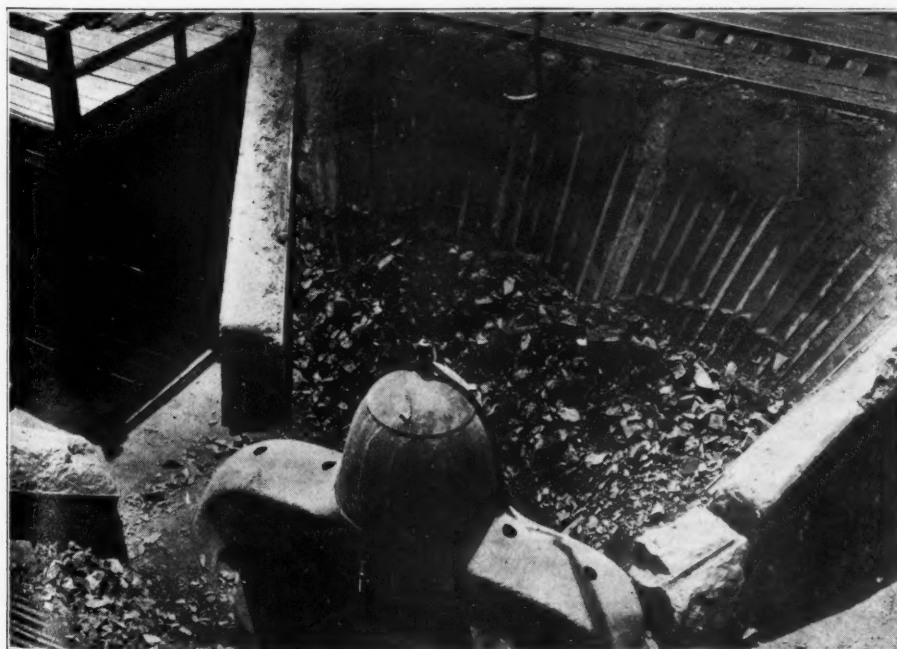
The cement is brought to the packing plant by a push conveyor—a type of conveyor not used to any considerable extent in this country, but according to Mr. Maddern a very efficient one. The essential details are shown in the accompanying sketch.

The conveyor consists of sheet metal vanes like a flight conveyor but instead of traveling steadily in one direction the movement is in forward strokes of about 6 in. by means of a crank arm.

The material in the trough is pushed forward with each stroke, and on the reverse stroke the vanes tip up and pass over the material. The next stroke moves another block of material forward 6 in. The operation is less dusty

Big Crusher Setting

THE ACCOMPANYING VIEW shows an interesting crusher setting, constructed of reinforced concrete. This view was taken at a large construction plant for a hydro-electric proposition in North Carolina. The use of reinforced concrete for crusher aprons is rather unusual, but in this case is said to be very satisfactory. The crusher is a No. 36.



Reinforced-concrete setting for a No. 36 gyratory crusher

Question Box

GOT a problem you want help on? Send it in. We will agree to find some operating man who can answer it.

than a flight conveyor and requires less power than a screw conveyor.

Also no special tripping device is required. Openings are provided in the bins through bag-shaped canvas chutes and are closed when not in use by drawing the ends of the bags together.

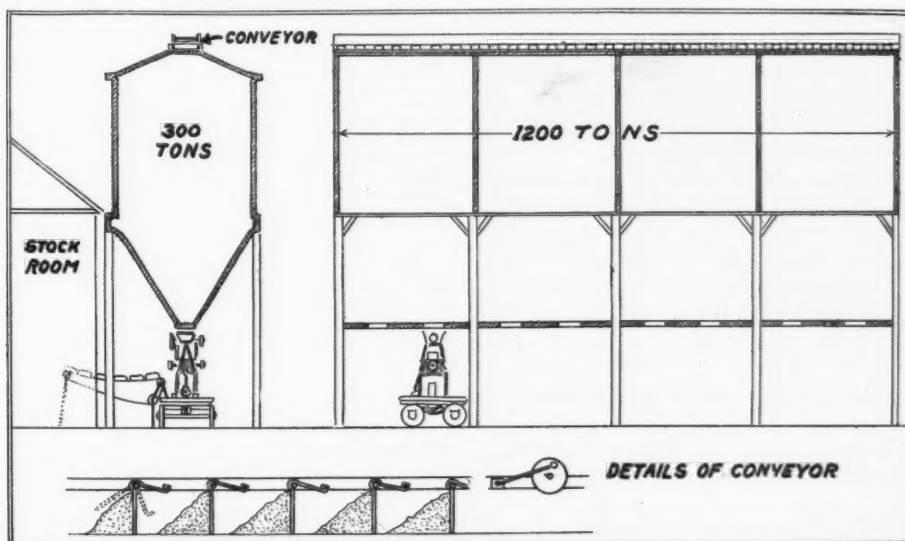
Four reinforced concrete bins of 300 tons capacity each are provided. All of these bins are served by a single bag-

ging machine mounted on a motor-driven truck on a track under the bins. **Traveling Bagger**

The traveling bagger is also equipped with a belt conveyor which discharges the bags as filled into the stock house alongside the bins.

This idea of a traveling bagger to serve a series of bins is the same which Adam Beck worked out for his Indiana Portland Cement Co. plant near Greencastle, Ind. (which was described in ROCK PRODUCTS of October 9, 1919). At that time it was not known that this system of packing cement had already been tried out successfully.

It is of course obvious that the same system could be used to advantage by manufacturers of lime hydrate and agricultural ground limestone. Jacks are used to make a tight connection between the bagger and the bins.



Cement-packing plant of the Adelaide Cement Co., South Australia

Quarry Blasting Shelter

CEMENT MANUFACTURERS have found that safety in quarries is promoted by providing blasting shelters or bomb-proofs. The accompanying view shows such a shelter constructed of rough stone with a boiler-plate top.



Blasting shelter made of quarry stone

New Silica Rock Industry in Canada Prospers

Has Developed Considerable Business in Filter Sand

MUNICIPALITIES AND CONTRACTORS in Canada who have to build filtration plants are always up against a rather difficult problem, when it comes to fill in the sand beds of their filters. Any kind of sand will not do for the purpose, so much so, that up to the present time that sand had to be imported from the United States at an almost prohibitive cost and with much inconvenience on account of transportation difficulties.

A good filter sand must consist of hard durable grains, either sharp or rounded, free from clay, dust, loam or organic matters. It should be carefully sieved and graded to a definite effective size and co-efficient of uniformity. It should also be capable to stand a strong acid test for dissolution.

It can readily be seen that all these qualifications are obtained if the proper quality of stone, i. e., quartzite or potsdam sandstone, is crushed and ground to the required size, and graded. This is now done by a new Canadian firm, the Cascades Silica Products Co., which was organized in view of supplying the steel industry with silica sand and rock, but which is now offering on the market for any size of a very high grade silica stone, from quarry size to silica flower.

Large Silica Rock Deposit

Two of the most extensive deposits of high grade silica rock yet found in Canada has been acquired by the Cascades Silica Products Co., of Montreal, this company having been recently organized by Aurelien Boyer, formerly of the Canadian Inspection and Testing Laboratories, Ltd., of Montreal, and Hector Frigon, formerly a director of the James Walker Hardware Co., of Montreal. The former is in practical control of the new company, while the latter has been appointed general manager.

Both of these valuable properties are located within a short distance of Montreal, the largest deposit being composed of the hardest mineral (quartzite), especially recommended by official authorities for the production of ferro-silicon. This property is located along the shore of the River St. Lawrence, about 30 miles west of Montreal, at the foot of the Soulanges Canal, thus providing excellent facilities for water transportation. It might be mentioned here that the company maintains, throughout the entire year, a large stock of silica sand in

their storage yard at Cote St. Paul, Montreal.

The second and smaller deposit is situated near St. Canut, about 60 miles north of Montreal, on the C. N. R. The entire deposit on both these properties consists of highly refractory rock, and is particularly suited for all classes of foundry work.

Main Crusher Plant

After washing, the sand is allowed to fall on a large endless conveyor which transfers the material to the storage department. When loading a barge at the company's wharf, another conveyor belt is used to deliver the sand from the storage piles to the loading hopper, whence it is discharged into dumping cars that travel beneath the discharge opening of the hopper. These cars are then allowed to descend by gravity to the wharf, a distance of a few hundred feet from the storage plant. The mill compressor and loading machinery are operated by electric motors of a total capacity of 140 h. p.

High Grade Glass Sand Found in Michigan

INVESTIGATIONS, conducted during the war, to find the best sources of pure silica sand for the manufacture of optical glass resulted in the discovery of a sand that is said to be equal to any so far reported in the literature. This deposit is located at Rockwood, Mich., and is being worked by the Rockwood Silica Co. It is stated that under careful supervision it was possible to obtain carload lots which averaged 0.015 per cent iron oxide, and some analyses as low as 0.004 Fe_2O_3 have been reported.

Glass sand for optical glass was also obtained from Ottawa, Ill., and Hancock, Md. Analyses of the best sand from these deposits averaged about 0.02 per cent Fe_2O_3 .

Prints Booklet on Silica Sand to Interest Users

IN THE PURSUIT OF BUSINESS the Commonwealth Silica Co. of Ottawa, Ill., publishes a handsome book of 16 pages bound in stiff board covers, entitled "Buffalo Rock Silica." This book announces a change in the methods of selling silica sand whereby the company places its financial advantages at the service of customers.

Other subjects discussed are the quality of Buffalo Rock sand, location and area, equipment of the company for the production and shipment of the product and a bit of history about Buffalo rock and silica sand. Nearly every page is illustrated. It is intended for circulation among users of silica sand.

Portland Cement Statistics for 1918

COMplete STATISTICS of the output of hydraulic cement in 1918 compiled under the direction of Ernest F. Burchard, of the United States Geological Survey, Department of the Interior, indicate a marked decrease from the output in 1917 and show that the production of Portland and other cements in 1918 was the lowest since 1909. The final statistics of shipments, production, and stocks are about 1 per cent lower than those given in the Survey's preliminary estimate published in ROCK PRODUCTS, January 29, page 28.

The shipments of Portland cement in 1918 amounted to 70,915,508 barrels, valued at \$113,153,513, compared with 90,703,474 barrels, valued at \$122,775,088, in 1917, a decrease in quantity of 21.8 per cent and in value of 7.8 per cent. The production in 1918 was 71,081,663 barrels, compared with 92,814,202 barrels in 1917, a decrease of 23.4 per cent. The stocks at the mills increased from 10,353,838 barrels in 1917 to 10,453,950 barrels in 1918, or 1 per cent.

The decrease in shipments and in production was general; it covered every state and commercial district and ranged from 8 to 40 per cent. According to the producers' reports about 54 per cent of the capacity of the cement-manufacturing plants of the country was utilized during 1918, but the capacity operated in the several states ranged from 38 to 70 per cent.

The average factory price per barrel for Portland cement in bulk in the different states in 1918 ranged from \$1.511 in Pennsylvania to \$1.894 in Washington; in 1917 it ranged from \$1.22 in the Lehigh district to \$1.69 in Washington. The average factory price per barrel for the whole country was \$1.596 in 1918, compared with \$1.354 in 1917, an increase of 24.2 cents, or 17.9 per cent. The prices in these two war years are the highest that have been realized for Portland cement since 1898 and 1899, when they were respectively \$1.62 and \$1.43 a barrel. The lowest average price, \$0.813, was recorded in 1909 and 1912.

The combined production of natural and puzzolan cements in 1918 was 432,966 barrels, valued at \$401,341, compared with 639,456 barrels, valued at \$435,370, in 1917, a decrease in quantity of 32.3 per cent and in value of 7.8 per cent.

Hydraulic Dredge the Only Power Plant of Lincoln Sand and Gravel Co.

Illinois Concern Pumps Material and Screens by Gravity—Stripping Most Difficult Problem

POWER IS USED at only one point at the Lincoln Sand and Gravel Co. operation near Lincoln, Ill.—on the dredge for raising and for pumping of the mixture of water, sand and gravel to the screening and loading structure. The screens being neither revolving nor shaking, but stationary, require no power, for the grading is done by the use of gravity and the hydraulic pressure that brings the mixture to the screens.

The many mounds or hills shown in the photographs indicate the extensive stripping operation which has become a greater and greater problem as exploitation of the acres has advanced. For the purpose a 60-ton drag-line of the locomotive crane type, with an 85 ft. boom and $1\frac{3}{4}$ cu. yd. bucket is used. The outfit is about 30 ft. high and stands on a 16-ft. gauge track.

Stripping Cut 150 Ft. Wide

This machine dumps its load at one side or other on top of other top soil, thus clearing out the overburden in a space about 150 ft. wide for the dredge to operate in. The overburden runs two to four feet deep.

Sometimes the dredge does the stripping by suction, but as the dredge is needed for producing profitable material, it is used only when orders are slack. The dredge disposes of the overburden to better advantage than a land stripper can, because it delivers the overburden to the center of the lake where it will be out of the way forever.

The dredge carries a 10 in. centrifugal

pump, operated by a 175 h. p. engine. This pump has given and is giving excellent results after five years of service. Built for an 18 ft. head, it has been given a total head of 32 to 35 ft. on a pipe line 1,000 ft. long. Made to handle 1,000 tons in 10 hours, it easily excels this amount on a short pipe line. It is now loading daily 22 cars of 50 ton capacity through the 10 in. pipe line, 1,000 ft. long with changing levels. With a short pipe line, say about 300 ft., the pump will load as many as 42 cars in a 10 hour day. The pump makes 350 r. p. m.

The mouth of the intake pipe sucks sand in 40 ft. of water. The per cent of solids in the mixture runs 10 to 12 per cent.

Solids Run 10 to 12 Per Cent

Two return flue boilers, 100 h. p. each, a double hoisting drum and engine, and a priming pump for creating the vacuum in the centrifugal pump are parts of the dredge equipment. An engineer and assistant, with an occasional helper, take care of the machinery, and one other attends to the boilers.

The pipe line is laid across a pontoon bridge over an island and over a trestle work to the screening structure.

The mixture flows out of the discharge pipe, the highest point in its course, with considerable force. It spreads out in a V-shaped decline of wood against the initial screen that (like the other screens which follow in consecutive order) is set at right angles to the course of the mixture. The screens are on movable

frames and are tilted slightly from the perpendicular, being set in grooves or runners. The V-shaped course gives a wide screening area; the initial screen is 25 ft. across from side to side. Screens for grading are set in pairs end to end, and each pair occupies an area equal to the initial screen.

Little Oversize

Oversize rejected by the initial screen is chuted to the lake waste pile. There is so little oversize that the company does not find it advisable to install a crusher.

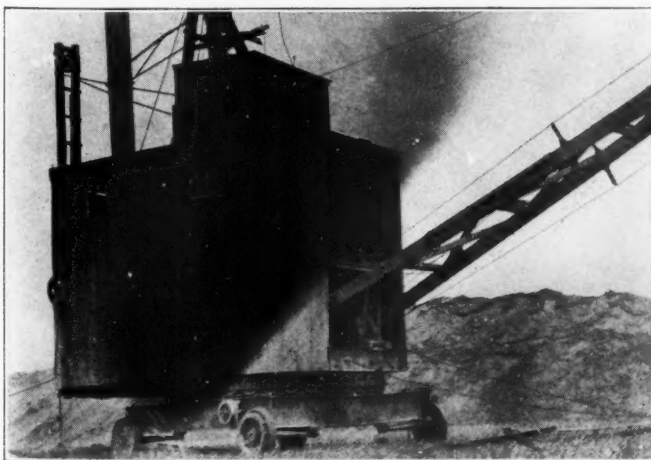
The screened material strikes the next pair of screens; the rejections follow a chute to a loading bin below and the passed material reaches the final pair of screens, if three sizes are wanted. There are three loading tracks and as there is no storage facility not more than three sizes are made at one time.

Grading may be varied by removing one set of screens and substituting another set. Two men do this in two minutes or less. Otherwise one man gives his attention to the screens.

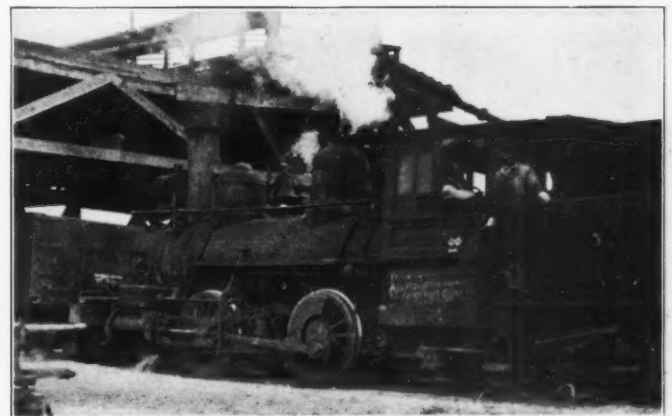
The sand goes through the final screens and flows to the settling tank or sand hopper, while the water with fine waste sand overflows into a chute leading to the lake. The sand loading bins or hoppers are of steel, the gravel of wood.

The car loading is handled by one man by operating levers controlling valves. Two cars on each track can be loaded at a time (total, six for the three tracks).

The company owns the lowest flat

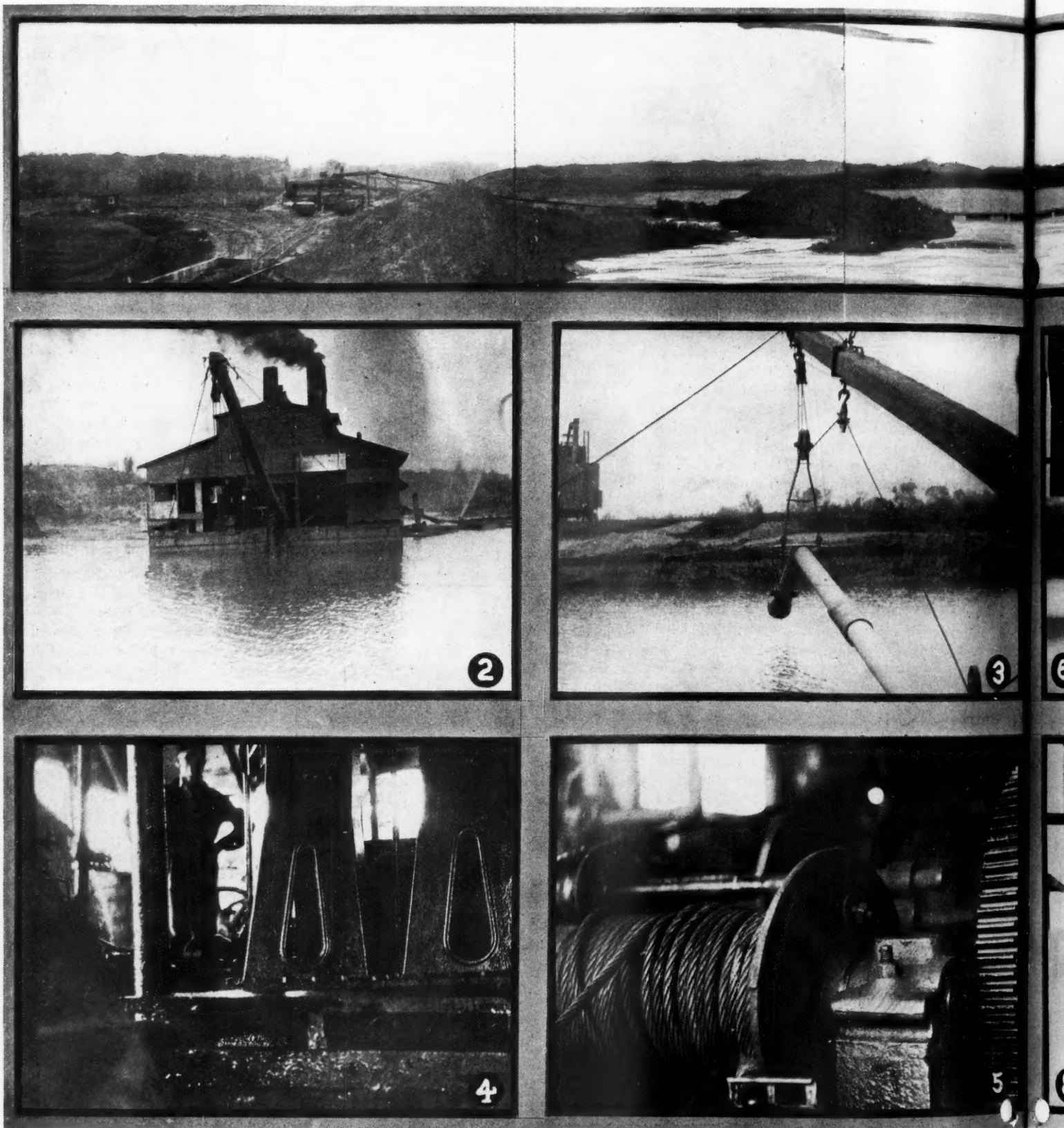


Drag-line outfit used at present for stripping



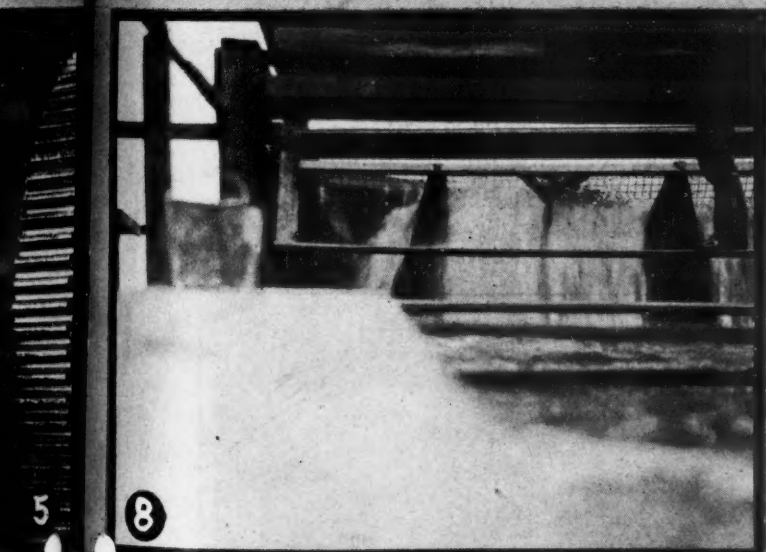
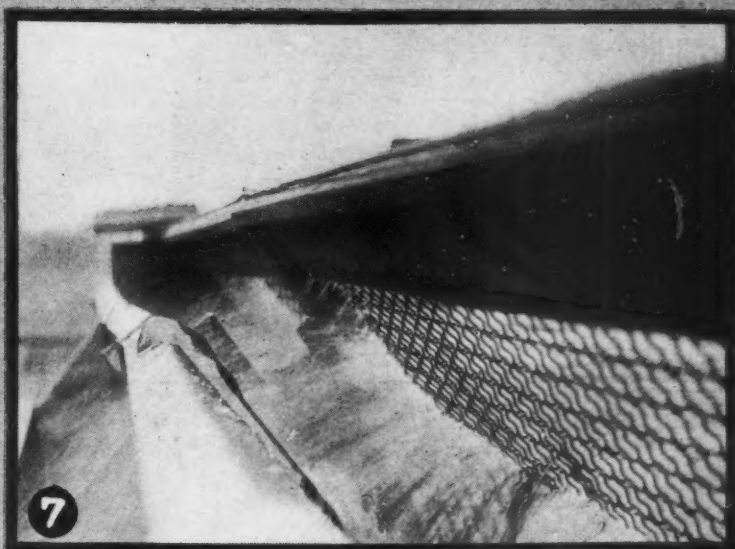
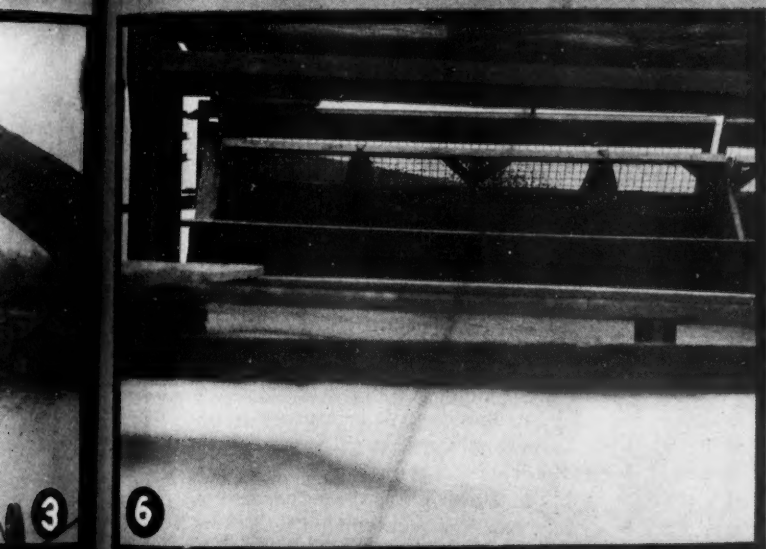
The locomotive and crew used for switching to main lines on a siding $1\frac{1}{2}$ miles long; the screening and loading structure in background

Views of Operations at the Plant of the Inc

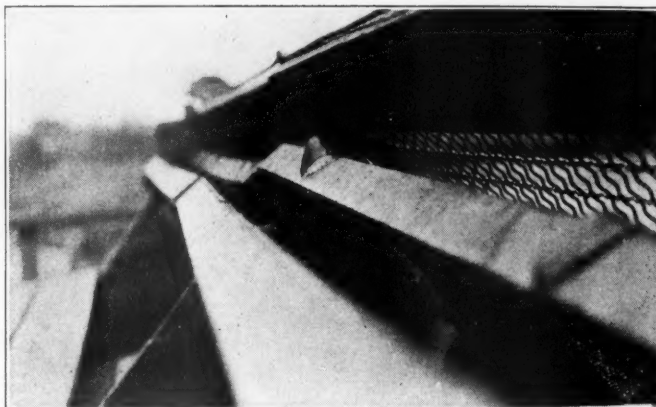


1—Panoramic view of operations; screening and loading at left; pipe line through island and over lake; stacks
 3—Intake pipe. 4—Interior of dredge showing part of the machinery. 5—Hoisting drum used
 7—Mixture going through screens. 8—Another view of t

the Lincoln Sand and Gravel Co. Lincoln, Illinois



lake; stacks of dredge and stripping machine at right. 2—Dredge sucking sand and gravel in 40 ft. of water. ing drum used for handling intake pipe. 6—Looking toward screens during temporary shutdown. other view of the screening. 9—Loading cars below screens



At left: Mixture discharging into V-shaped decline at screening plant.

At right: Chute for oversize below V-shaped decline.

At left below: Showing three movable screens not in use.

At right below: Initial screen and two other sets of screens in place.

lands of the section, which undergoes an annual flood, now considered as a matter of course. Its railroad siding is $1\frac{1}{2}$ miles long and on an upgrade, the terminal of which conveniently makes direct connection with three railroads, the Illinois Central, the Chicgo & Alton and the Illinois Traction System (electric).

The requirements of the Lincoln district market, which requirements apparently are not too exacting nor whimsical, enabled the designer of the plant, George E. Hoffman, to provide this simple equipment—a combined screening and direct loading structure.

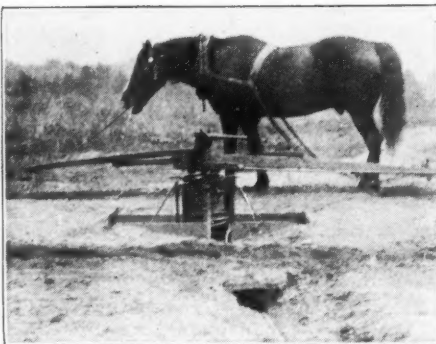
The plant has been in operation 12 years. The company learned and adopted

an economical fact—that it could shift and spot cars around the plant without the aid of a locomotive, which had been keeping an extra engineer and fireman on the pay roll and an account with the coal man, by employing "Barney," a strong, capable and willing horse and a stump pulling winch with a cable. Barney earns his feed, as he is an economical factor. He can move four loaded cars. Now only one locomotive is used and that for switching to the main railroad line. The crew consists of an engineer, fireman and brakeman.

As the years have gone by, there arose a higher cost and a decreased capacity, owing to the increased distance of the dredge from the screening plant and the

necessity of pumping the sand mixture through a constantly increasing pipe line. Another unpleasant feature has been the cost of stripping, which also runs high, when it has been necessary to handle overburden a second and even a third time. All through the stripping operations it has been necessary to dump the overburden at one side on other top soil, as has been stated. Eventually, it becomes necessary to remove this displaced overburden again and sometimes a third time in order to get at the good material below. While the original cost of handling may be only a few cents, the several rehandlings will run up the cost materially.

The remedy is to dump the stripping



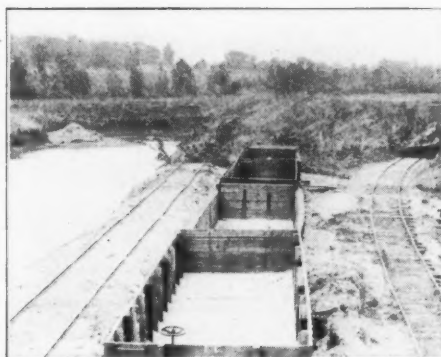
Barney and the winch for moving cars.

Locomotive which Barney displaced; machine shop at the right.



into the lake at a point where the sand and gravel has been removed, but this point must be 150 ft. away from the bank of the lake; the boom of course cannot reach that point. The Atwood-Davis conveyor system will not do, according to Superintendent S. R. MacNeal, because a conveyor cannot be suspended very well that distance. He plans to erect a mast head in the lake and will use a cable way to convey stripping to the dumping point.

In order to overcome the disadvantage of the long pipe line, the company has planned the removal of the screening plant to a point around the lake nearer to the present position of the dredge.



View from top of screening plant showing stub ends of three loading tracks at the Lincoln plant

The switch tracks will be extended to that point also. When this is done there will be a saving in the handling of coal which now has to be transported by barge from a switch near the screening plant to the dredge.

The company has a large machine shop equipped with forge, lathes, drills, etc. Power for these tools is furnished by an oil burning engine. A complete acetylene welding outfit was installed last month.

The Lincoln Sand & Gravel Co. maintains offices at Lincoln, Ill. V. O. Johnston is president and treasurer and J. C. Brandt general manager. It is one of three plants owned by the company.

Sand and Gravel Men Will Let Freight Rate Case Rest for Present

ON MAY 23 YOUR SECRETARY, together with H. C. Huffstetter, president of the Indiana Association, and Luther M. Walter, traffic attorney, made a further attempt to induce Director Chambers to extend the reduction in rates of 10c a ton, authorized on sand and gravel for highway purposes, to apply to all commercial shipments. The petition was declined as was also a counter proposal to agree on a method of facilitating the prompt handling of a case before the Interstate Commerce Commission, attacking the reasonableness of the advance on sand and gravel rates prescribed by General Order No. 28.

In view of the fact that the railroads will be turned back to the owners at the end of the year, the Executive Committee of the National Association has decided that it would be unwise to take the rate question before the Interstate Commerce Commission now, because of the time and expense required to follow the usual course of procedure before that body. Besides, entirely different conditions may prevail after Congress has passed legislation dealing with the railroad problem.

Under the existing circumstances it is apparent that no general reduction in rates on sand and gravel or on any other building materials may be expected this season. It

is urged, therefore, that every effort be made to prevail upon those having construction work in prospect, either public or private, to proceed at once.

The probability of advances on sand and gravel rates being made this year will be watched with care and vigorous protest entered in case such action is proposed. Moreover, plans will be formulated for securing a revision or readjustment of rates at a time when the chances for securing satisfactory results are more favorable than they are at present.

E. GUY SUTTON,
Secretary, National Association of Sand and Gravel Producers.

Canadian Sand and Gravel Statistics

THE TOTAL SALES of sand and gravel, produced in Canada during 1917, amounted to 9,182,417 tons valued at \$2,326,249, as against 8,156,207 tons valued at \$1,838,320 in 1916, an increase of \$487,929, or 26 per cent in total value.

The 1917 production included: building sand and sand for concrete and road-building, 1,505,907 tons valued at \$614,272; gravel, including sand and gravel and crushed gravel, 2,214,369 tons valued at \$904,584; railway ballast, 5,312,218 tons valued at \$718,801; moulding sand, 46,790 tons valued at \$46,018, and other sands, core sands, engine sands, etc., 103,133 tons value at \$42,574.

Previous to 1912 no attempt had been made by this department to obtain statistics of the production of building sand

or of gravel in Canada. In 1912, however, a beginning was made, the returns received showing a production valued at \$1,512,099. The increasing production during the next two or three years is no doubt due in considerable part to the greater efficiency in the collection of the record.

Boosting Gravel Business with Book of Photos in Texas

TO CREATE BUSINESS, not merely get business for gravel, is the object of the handsomely illustrated booklet published by the J. Fred Smith Gravel Co., Dallas, Texas.

Photographs of concrete roads, houses, grain elevator and tanks and flour mills constructed of the company's "Pit-Run" gravel, constitute a series of telling testi-

monials for its product. There is argument for concrete in text also. The book consists of 24 pages with a stiff sand-colored cover bound with a silken cord.

On the cover is an impressive picture of the Dallas viaduct made of the company's gravel. The inner pages show the nifty residences of the producers and the other pieces of construction done with the gravel, including pictures of the pits and the shovels.

The J. Fred Smith Gravel Co. has pits at Trinity Mills, Letots and Carrollton, not far from Dallas, and operates at the three places with steam shovels loading directly into railroad cars. The loading capacity is 200 cars daily. The company's capital is \$200,000 and the officers are J. Fred Smith, president, and Rhea Miller, secretary-treasurer. C. H. Jackson is sales manager. The office is in the Southwestern Life Building, Dallas.

Buffalo Sand and Gravel Men Form Distributing Corporation

Four Largest Producers of Niagara River Sand and Gravel Combine for Service and Efficiency in Sales and Distribution

THE FOUR PRINCIPAL PRODUCERS of Niagara River sand and gravel—the Empire Limestone Co., the Perry-Victoria Sand Co., the Niagara Sand Corporation, and the Squaw Island Sand Co., all of Buffalo, N. Y.—have joined in forming the Buffalo Gravel Corporation, the main office of which is at 19 Hudson St., Buffalo, N. Y.

The officers of the Buffalo Gravel Corporation are, president, D. Hyman, of the Empire Limestone Co.; vice-president, S. J. Dark, of the Perry-Victoria Sand Co.; secretary, J. E. Carroll, of the

Niagara Sand Corporation, and treasurer, D. E. Knowlton, of the Squaw Island Sand Co.

Mr. Hyman is the owner of the steel dredge "Elco," described in detail in ROCK PRODUCTS of December 4, 1918, which is the largest producing unit in the new combine. The other equipment of the four producers consists of seven sand suckers, six scows, tugs, etc.

The new corporation has taken over the yards, shore plants, equipment, trucks, buildings, etc., formerly used by all the subsidiary corporations in selling

and distribution. The four producing companies retain their identity as individual organizations and still retain title to their own dredges, scows, tugs, etc. The yards, etc., are leased to holding corporation.

These four producing companies have a total annual average output of about 1,000,000 cu. yds.

The Buffalo Gravel Corporation disposes of the entire output of all the producers, thus making possible many economies in handling and distribution and guaranteeing purchasers the most efficient service possible. This corporation maintains seven yards on the city waterfront, as shown on the accompanying map, extending practically the length of the city, and on the Buffalo River within the interior of the city.

The city has been divided into zones and a season price fixed for each zone, as shown. These prices, reduced to a tonnage basis, are: Gravel 75 cents per ton, grit (torpedo sand) 80 cents, and fine sand 95 cents per ton, f. o. b. cars at the yards. This is \$1.20 per cu. yd., as printed on the map.

The general manager and active operating head of the new holding corporation is Rubin Eberly, formerly of the Perry-Victoria Sand Co. The general offices of the corporation are the offices of the Empire Limestone Co.

Winter Storage of Sand Is a Growing Necessity

USE OF SAND and gravel in the winter months will steadily increase as the years go by, according to several Illinois producers. This promising prospect is due to the efforts of cement manufacturers in advocating concrete construction work in winter and in showing how it can be done safely and successfully.

This means that producers who have not already provided themselves with means for winter storage should keep an eye open to the possibilities in this direction.

"Winter storage facilities is a growing necessity," said M. D. Schaff, president of the Virginia Timber Co., Springfield, Ill., and president of the Illinois Sand and Gravel Producers' Association, to a representative of ROCK PRODUCTS. "This is due to the cement people who have been urging the laying of concrete in winter. Naturally, that has increased the demand for sand and gravel in the period when we are shut down. We have felt that demand; certainly others have also."

Various systems of winter storage will receive particular attention in succeeding issues of ROCK PRODUCTS, contributions and discussions of this subject are solicited from sand and gravel plant operators, also storage cost data.



Map showing distribution system of Buffalo (N. Y.) Gravel Corporation

Chemical Bureau of the Lime Association Developing

Great Possibilities for Service to American Lime Industry Are Promised

ONE OF THE MOST INTERESTING and certainly the most remarkable achievement of the first year of the Lime Association under the able managership of Robert F. Hall is the progress made by the Association's chemical bureau, of which Allen D. Whipple is chief.

Lime itself is one of the principal chemicals of industry and one of the very oldest. It is a necessary agent or ingredient in a host of chemical processes. Yet until the Lime Association took hold of this problem little or no attention had been paid to this phase of the lime industry.

Within less than a year the chemical bureau of the Lime Association has ferreted out nearly every industrial use of lime and the results have been astonishing even to old and experienced lime manufacturers, because even the widest individual experience did not begin to cover but a small fraction of the field.

Announcement is now made that the chemical bureau of the Lime Association will soon be in a position to furnish members with some of the results of its investigations. This work having been accomplished at the expense of the members it has been decided to give this information to members only.

This information, it is announced, will consist of outlines of various processes with particular reference to the uses of lime, together with such information as is available relative to limits of impurities. These articles will not be of sufficient length to be worthy of issuing as printed bulletins nor will they be intended for general distribution, but rather as a guide to manufacturers that will make clear to them whether or not their particular product can be successfully used in the particular process in question. For instance, certain phases of the patent protection of a noted process will soon expire and new manufacturing interests will start up in different parts of the country. An outline of this process will soon be given the members so that inquiries for lime supplies to be used therein can be met by them with a good general knowledge of the requirements of the case.

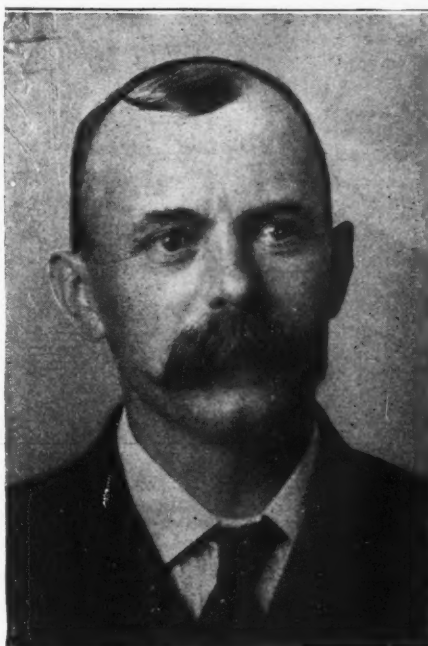
Such service as this is a very obvious advantage and should prove an additional inducement to prospective members. Doubtless as the bureau's laboratory service is developed it will be in a position to give more specific information

and definite expert advice on the treatment of various limestones to the advantage of the members.

To be wholly successful, however, the Lime Association must so organize this work as to co-operate with the chemical industries which produce their own lime. And a very considerable percentage of the lime used in the industries is produced as a part of the process of those

industries—as in sugar refining, the manufacture of soda ash, cyanamid, calcium carbide and many other well known chemicals.

The ultimate object of the Association must of course be to induce these industries to buy lime more suitable to their purposes or produced more economically than the industries themselves can produce. To accomplish this object the chemical bureau of the Association must achieve a position in the industrial world where it will be considered as something more than a service bureau of the commercial lime manufacturers, for it will have to win the confidence and support of big purchasers—chemists and engineers—as well as member lime companies.



Philip J. Dauernheim

Lime Industry Loses Well Known Member

THE death in St. Louis, Mo., recently of Philip J. Dauernheim removes one of the foremost figures in the American lime industry. He was a recognized expert in lime manufacture and the inventor and improver of several processes and methods.

Until ten years ago Mr. Dauernheim was the active head of the Chas. W. Goetz Lime & Cement Co. At that time this company was consolidated with the Glencoe Lime & Cement Co., of which Mr. Dauernheim became manager. Since then he had been elected second vice-president in charge of operation.

He was a prominent figure at many of the conventions of the old National Lime Manufacturers Association and his death will be sincerely felt by a host of friends in the industry.

March Exports of Cement

WASHINGTON, D. C.—While imports of cement during the month of March totaled but 2,500 pounds, valued at \$22, our exports during the month amounted to 123,503 barrels, with a value of \$386,099, according to a special report just prepared by the Department of Commerce. Our best customer for this cement, it is declared, was Cuba, closely followed by Brazil.

The following table, secured by the Washington Bureau of ROCK PRODUCTS from the department, shows in detail our exports during March:

Countries.	Barrels.	Dollars.
Bermuda	330	1,016
British Honduras.....	84	308
Canada	689	2,359
Costa Rica	186	731
Guatemala	691	2,901
Honduras	117	566
Nicaragua	463	1,457
Panama	830	2,520
Salvador	983	3,254
Mexico	14,337	43,781
Newfoundland & Labrador	708	2,078
Barbados	325	1,001
Jamaica	218	1,258
Trinidad & Tobago.....	1,000	3,104
Other Br. West Indies....	60	197
Cuba	26,240	84,954
Virgin Islands of U. S....	30	140
Dutch West Indies.....	211	934
French West Indies.....	530	1,725
Dominican Republic	1,445	5,441
Argentina	13,162	37,280
Brazil	22,979	71,197
Chile	11,039	33,630
Colombia	5,843	19,945
Ecuador	170	508
British Guiana	990	2,693
French Guiana	760	2,373
Peru	8,159	25,914
Venezuela	233	740
Dutch East Indies.....	100	292
Hongkong	10	55
New Zealand	45	251
British West Africa.....	8,243	25,155
British South Africa.....	640	1,600
French Africa	1,250	3,320
Liberia	403	1,421

Manufacture of Carbonic Acid from Limestone, Dolomite and Magnesite

Production of Pure Carbon Dioxide—Calcining Stone in Retorts—Also Produces Very High Grade Lime

IN ROCK PRODUCTS of January 29th, 1919, I have described and illustrated a process by which carbonic acid is obtained from the gases of lime kilns by chemical absorption, purification and liquifying.

In the introduction of this first article I have already indicated that carbonic acid in almost pure condition can be directly obtained by calcining the carbonate rock in retorts. In case of amorphous (white) magnesite rock this process is very simple. At first cast-iron retorts, directly coal-fired, were used for this purpose, but very often the retorts were burnt through after a short time and had to be renewed.

The introduction of producer gas firing and cast-steel retorts prolonged the life of the retort for such an extent that this process became the most economical in case of amorphous (white) magnesite, which discharged the carbonic acid completely at 600 deg. centigrade, and in practice is calcined most economically between 700 and 800 deg. centigrade.

Fig. 3 shows a small plant designed and built by the author; the diagram shows only one retort B; however, it is understood that several retorts may be arranged in one furnace side by side.

The furnace is equipped with a gas producer or semi-gas producer g. The hottest flame is developed above the retort, the roof of which is covered with refractory material; the air for the combustion of the gas is admitted through flues a above the roof of the combustion chamber, and the heat which is finally radiated through the top arch of the furnace is used for preheating the magnesite rock at D (thereby also burning out organic matter).

After the flame has indirectly heated the roof of the retort, it is conveyed through side flues in order to heat the side walls of the retort, which also may be protected by fire-clay tiles. Finally the flame is directly heating the bottom of the retort through flues f'; then the flame which still has a temperature of over 800 centigrade degrees (about 1,500° F.) should be discharged through flue F under a boiler in order to produce the power for liquifying the carbonic acid (CO_2).

The carbon dioxide gas which is developed in the retort, is conveyed through a pipe line e to a condensing pot c and

By E. Schmatolla

Consulting Engineer, 217 Broadway,
New York

through a series of bottles or tanks d, which contain purifying chemicals, to a gasometer E in order to collect the pure carbonic acid gas (CO_2). The liquefying plant may be the same as shown in the second diagram of the first article (on page 27 of ROCK PRODUCTS of January 29, 1919). It is obvious that the magnesia which has been produced from the magnesite in retorts at a certain controlled temperature is a much purer and better caustic product than the magnesite directly burnt in kilns, as the magnesium oxide changes its constitu-

developed and is further developing, that the retort process can be used for manufacturing carbon dioxide direct from high calcium limestone and at the same time obtaining a high calcium lime, which has not been touched by any flame and is burned at a temperature best adapted to produce a lime having the maximum of hydrating and chemical activity.

The modern gas-fired regenerative furnace makes it possible to burn the rock in vertical retorts at a minimum cost of fuel and labor.

To illustrate this in principle I have drawn a diagram, Fig. 4, which shows one vertical retort kiln R equipped with a gas producer G (indicated in the rear with the coal feeders G' on top) and further equipped with two regenerative

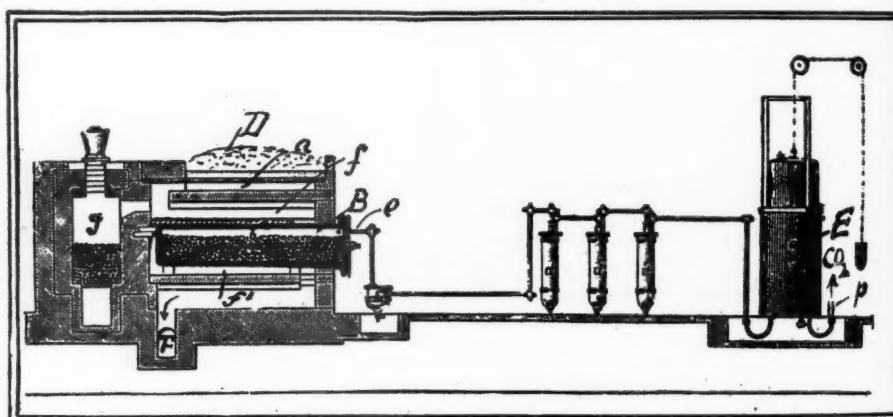


Fig. 3. Small plant for recovery of carbon dioxide

tion between 1,000 and 1,100 degrees C. (about 1,800 to 2,000 F.), decreasing considerably the hydrating and chemical activity.

Although in the above process it may take 1,000 lbs. of coal to produce 1,000 lbs. of burnt magnesite, at the same time about 1,000 lbs. of carbonic acid are produced, so that the carbonic acid pays for the calcination of the magnesite, and even if the carbonic acid has to pay for all the coal it is still produced more cheaply than the same product made by burning coke and the absorption process.

It is evident that by a similar process as described above carbonic acid may be manufactured from dolomite, preferably in connection with a process for making precipitated magnesium oxide or carbonate. The manufacture of refractory iron and steel alloys has so highly

chambers B-B in which the checker work is only partly indicated. The diagram further shows in dotted lines at the bottom a device for reversing the flow of the heat towards the chimney flue m in order to throw back the usable heat to the furnace, and to prevent the escaping of any appreciable amount of heat through the chimney. The reversing device is only a light sheet iron box K open at the bottom in order to connect the exhaust or chimney flue m with one of the two ducts i i. The combustion chambers c of the furnace are connected with the gas producer G by two ducts g which can be disconnected from the retort furnace by means of slidable tiles or dampers g.

The diagram shows the damper g' on the left hand side open, while the damper g' to the right, is closed. In the

reversing box **K**, as shown in the diagram, the left hand duct **i** is left open to the atmosphere so that air can enter from the outside through the left hand flue **n n'** into the regenerative chamber **B** and through the upper duct **b** into the combustion chamber **C** on the left side of furnace. There the air meets the gas coming from the producer **G** (or another source, e. g., natural gas oil vapors) through the left hand duct **g**, and its open damper **g'**, and a hot flame is developed which first travels downward

and leaves the right hand duct **i** open. At the same time (or immediately afterwards) the right-hand gas damper **g'** is opened and the left-hand one closed, whereby the flame is developed in the combustion chamber **c** to the right and the flow of the flame or heat is reversed, so that the left-hand regenerative chamber **B** stores the heat which has not been transmitted into the retort **R**, in order to calcine the stone contained in the retort **R**. The calcined product is drawn from the retort kiln **R** through a

designed to illustrate the principle of which various details are possible.

Lime in the Industries

THE CHEMICAL BUREAU of the Lime Association, Washington, D. C., has made a very complete and interesting tabulation of the use of lime in the various industries, which will be an eye-opener to every producer of lime. Nor is it claimed by any means that the list is complete as discoveries along this line are constantly bobbing up.

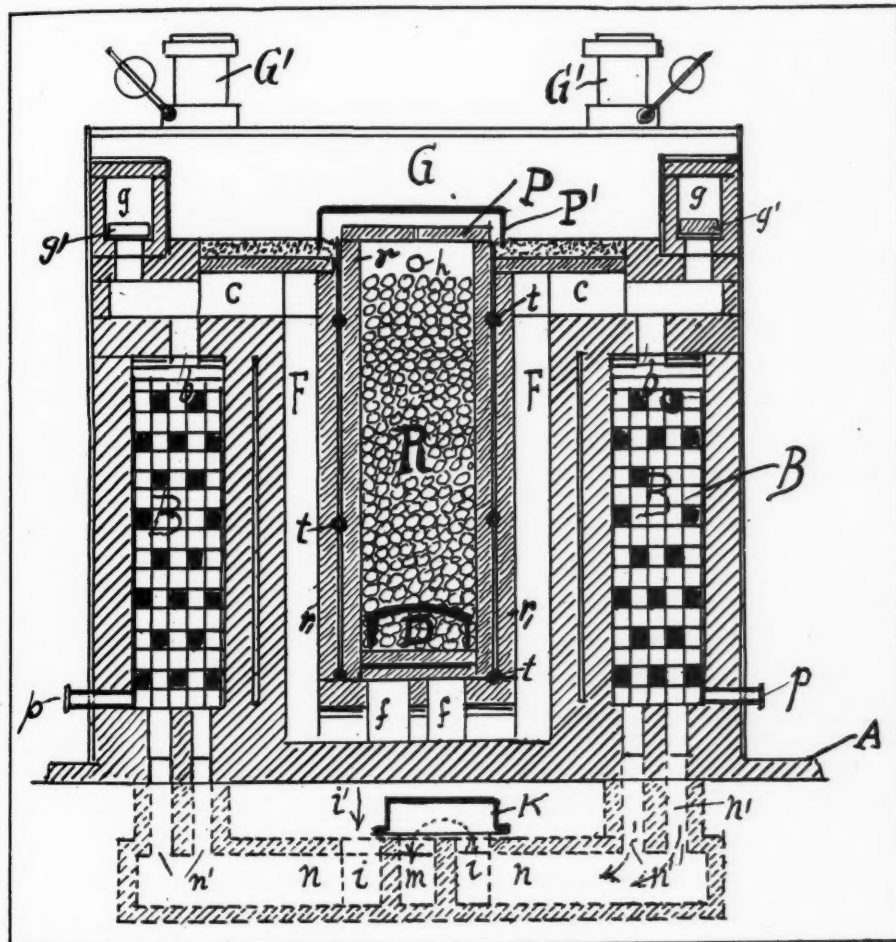


Fig. 4. Diagram illustrating principles of a retort for making carbon dioxide

through the left-hand fire-flue **F**, then across under the bottom of the retort **R** through ducts **f** and rises again through the right-hand fire-flue **F** and down again through the right-hand regenerative chamber **B**. The checker work of the regenerative chamber absorbs or stores the usable heat, and finally the waste gases minus heat values escape through the bottom flues **n n'** and the box **K** to the chimney or exhaust flue **m**.

After a certain time (about two hours) the fire bricks which form the checker work in the right-hand regenerative chamber **B** have stored so much heat that the box **K** begins to become hot. To avoid loss of heat the box **K** is then reversed, so that it connects the left hand duct **i** with the chimney flue **m**

door **D** at the bottom and the carbon dioxide gas leaves the retort at **h**, which indicates a pipe connection.

The retort may be charged and discharged semi-continuously like a lime kiln. In a regenerative furnace of such kind it will not be necessary to use thin-walled manufactured retorts, but the retorts can be built double-walled from refractory tiles or fire brick with a space between the walls, which may be filled with a suitable packing material (or a gaseous medium). The small circles **t** indicated at this space in the diagram may be observation tubes or thermocouples of pyrometers for controlling the temperature continuously. Of course, the working drawing will be different in detail from the diagram which is only

Building and Construction
Plaster
Mortar
In concrete
Stucco
Gypsum products
Sand-Lime brick
Slag brick
Agriculture
Direct use on the soil
In prepared fertilizers
Lime and wood-ash mixtures
Insecticides
Spraying material
Bacteria (Protection of)
Potash recovery processes
Caustic Alkali Works
Soda ash
Caustic soda
Potash salts
Ammonia
Chemical Works
Manufacture of acids
Calcium acetate
Sodium cyanide
Potassium cyanide
Calcium carbide
Alcohol
Dehydrating of
Manufacture of
Wood distillation
Bleaching powder
Magnesia
Bone ash
Phenol
Barium products
Precipitated calcium carbonate
Salt refining
Rubber treatments
Explosives
Cyanamid
Nitrates
Gelatine
Glycerine
Preparation on gun cotton
Paint Manufacture
Calcimine
Whitewash
Cold water paints
Putty
To hold heavy materials in liquid suspension
Sanitation
Water purification
Water softening
Sewerage and garbage purification
Neutralization of acid waters
Chloride of lime

Disinfectants
Prevention of putrefactive ferments
Metallurgy
Copper recovery process
Iron blast furnace flux
Steel manufacture
Steel purification
Smelter flux
Aluminum manufacture
Brass manufacture
Metal pickling
Electric furnace flux
Refractory and Insulating Materials
Cintored or dead burned dolomite
Ganister brick
Basic magnesium carbonate
Coke and gas manufacture
Coal gas and water gas purification
Coke oven by-products
Gas plant by-products
Glass Manufacture
Window glass
Plate glass
Bottle glass
Optical glass
Glass tubing
Sugar Manufacture and Refining
Tanneries
Oil, Fat and Soap Manufacture
Soap
Lubricating grease
Candles
Renovation of grease
Renovation of butter, etc.
Neutralizing acidity of oils
Paper Industry
Soda process
Sulphite process
Sulphate process
Rag process
Straw board
Miscellaneous Industries
Glue manufacture
Pottery manufacture
Porcelain manufacture
Polish and buffing compounds
Corn products manufacture
Cotton and thread mills
Print works
Flour mills
Medicinal and Proprietary uses

Lime Manufacturers To Meet Plasterers' Association

THROUGH THE EFFORTS of the Lime Association a meeting has been arranged in New York City, June 10, between a committee representing the lime manufacturers and the Employing Plasterers' Association, of New York City. The purpose of the meeting is to lay before the plasterers the reasons why present rulings which work a hardship on the lime industry should be rescinded.

What Soils Benefit by Lime, and Why

Acid Soils Not the Only Types Which Are Improved—Greatest Returns on Top of Benefits from All Other Treatments

A LIMESTONE COUNTRY IS A RICH COUNTRY—This is a saying long ago common among European farmers, but the truth of the maxim is as well demonstrated all over eastern United States. There are in this country certain large continuous areas of limestone land, regions in which the soil is derived from the disintegration and decomposition of limestone rock. These sections because of the productivity and durability of their soils and the consequent prosperity of the farming population have become famous agricultural districts.

The Blue Grass region of western Kentucky and Tennessee, on the whole one of the most excellent farming sections of eastern United States, illustrates this fact. Another notable example is the beautiful Shenandoah Valley of Virginia and southeastern Pennsylvania, which is not an ordinary river valley, but a fold in the earth formed by a mountain chain on either side. Massive beds of limestone have been formed in this depression, and it is from these limestones that the famous soils of the Shenandoah are derived.

The "corn belt" of the Central West, the garden spot of the earth—for there is nowhere else to be found so large a continuous area of very fertile land—owes its wealth largely to the abundant limestone formations of the Mississippi valley which were ground up by that gigantic pulverizing machine, the glacial mill, and spread out over the land. Weather and cropping have fast reduced the lime in these prairie soils until they are now for the greater part in need of new applications.

How Much Limestone Needed

A. D. Hall, formerly director of the Rothamsted Experiment Station, asserts that a soil is benefited by liming when the content of calcium carbonate falls below 1 per cent. Hall's familiarity with this subject makes his statement carry much weight. One per cent of lime carbonate means approximately 10 tons of limestone per acre to plow depth. If this much limestone is needed certainly there are only exceptional areas east of the Mississippi river that would not be benefited by the application of ground limestone. As a matter of fact, we have no good reason to doubt the truth of Hall's statement. We do have evidence that soils respond to liming before their carbonate content is entirely used up. With all other factors in plant growth

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well cared for, production is likely to fall short of its possible attainment if the soil does not contain a liberal amount of lime carbonate.

How Much Limestone Profitable

This approaches the subject from a somewhat different angle. A soil may be ever so sour, but if a deficiency of nitrogen or phosphorus, or lack of drainage is holding down crop yields, the application of limestone may at first give only small profit. This suggests the very principle that determines how much limestone may well be used under any given condition. It may safely be assumed as a general rule that a soil will not measure up to its full possibilities in production until it contains, in the surface 6 inches, about 1 per cent lime carbonate in addition to that required to neutralize the acidity now present.

This amount, however, can be economically applied only so fast as other fertility factors are carried up at the same time. For example, we have abundant evidence that soils in a good state of fertility and not responding favorably to an application of limestone will yet use limestone at a profit after phosphorus and nitrogen have been more abundantly supplied, or after the physical condition of the soil has been improved by growing a deep rooted crop.

Even though a lack of limestone were the only hindrance to maximum production, or production up to the limits of sunshine and rainfall, it would seldom be good business to apply the entire quota of limestone at one dose. It might take the increase in crop so produced over a period of two, three or more years to equal the cost of the heavy limestone treatment, hence the wisdom of buying the limestone in installments.

Experiment station data indicates that in general about 2 tons per acre of limestone is an economical application under conditions that call for its use and that this amount may be applied every 3 or 4 years until the soil is well stocked with carbonate, provided only that other factors in production are kept apace.

Balanced Fertility

The following data illustrates the fact that limestone gives higher returns on

land which has been otherwise well treated with fertilizers and manures.

USE OF LIMESTONE ON CORN, OATS, WHEAT, CLOVER, TIMOTHY ROTATION

10 year Average Results, Wooster, O.	
Materials applied—	Av. value of increase per acre for one rotation due to limestone
Limestone only	alone \$30.20
Limestone and acid phosphate	31.90
Limestone (Muriate potash)	37.00
Limestone (Acid phosphate)	
(Nitrate soda)	
Limestone (Acid phosphate)	39.75
(Muriate potash)	
Limestone, manure	37.40

Values determined on basis of \$1 per bu. for corn, 50 cts. for oats, \$2 for wheat and \$20 per ton for hay. No account taken of straw or stover. Limestone, 2 tons per acre each 5 years.

Illinois field experiments on brown silt loam land, scarcely acid in reaction, and typical of the corn belt, shows applications of limestone to be an important factor in good soil management. Here, as a rule, liberal use of phosphorus and organic matter must be made before limestone shows up to advantage. At Bloomington, for example, over a period of 15 years, limestone applied alone at the rate of 2 tons per acre each five years apparently gave a decrease in crop; but used in addition to 1,000 pounds of bone-meal per acre, per rotation, and the plowing under of crop residues, the increase due to limestone amounted to about \$6.25 worth of crop per year. About \$5 worth of crop for \$1 invested in limestone at \$3 per ton. Without limestone the other treatments produced as high as 78 bu. per acre of corn and 60 bu. of wheat; the increase given above for limestone being on top of the other treatments.

At Urbana, Ill., on rich, dark brown corn land well treated with manure, limestone 2 tons per acre has produced average increases, over a period of 10 years, amounting to 2 bu. per acre of corn, 2 bu. of oats, 6 bu. wheat, 600 lbs. clover hay and 1,800 lbs. alfalfa hay. Limestone is a necessity to the landowner who expects to get very far in building up a poor acid soil. **Yet it offers the greatest returns to the man who is already well along in soil building but has by some chance overlooked the use of lime.**

Correcting Acidity

A fair sized crop, for instance a 65 bu. corn crop, will require per acre at least 100 lbs. of nitrogen. This nitrogen in the course of its being prepared for plant food becomes nitric acid, amounting to 450 lbs. per acre, an amount which if liberated all at once would be sufficient to destroy an acre of any growing crop. It must be neutralized as fast as

formed for the bacteria responsible for its elaboration require a nearly neutral medium.

A 5-ton to the acre crop of alfalfa involves about 225 lbs. of nitrogen equivalent to 1,012 lbs. of nitric acid, all of which must be promptly neutralized. It can easily be appreciated that these processes of nitrification do not go on freely unless a liberal amount of readily available base is present. And this means abundance of free lime carbonate. If carbonates are not present these acids attack the basic constituents of the silicates, but are not so promptly neutralized in this way. Finally the potential basicity of the soil is reduced to a very low degree and nitrification proceeds but feebly.

When the stronger basic constituents of the soil are nearly exhausted there may be formed appreciable quantities of such salts as iron or aluminium sulphate, salts of a strong acid and a weak base. Such salts have a sharply acid reaction; their presence in the soil is so objectionable to nearly all plants that the soil under those conditions is said to be toxic, poisonous. Large areas of eastern soils have reached this state of affairs and the addition of ammonium sulphate without a good application of limestone is almost the same as a dose of poison.

Organic acids are constantly forming in the soil just as surely as they are formed in the silo, in the making of sauerkraut, in the souring of milk, or in the change from fruit juice to vinegar. But this is only temporary acidity. Decomposition proceeds further and the organic acids are broken up into other compounds, finally into harmless carbon dioxide and water. Under some conditions, however, these acids may be formed in such amounts as to reduce crop yields unless they are neutralized by lime carbonate instead of waiting for decomposition to destroy them. This sometimes happens after plowing under green manure crops, especially where the growth is rank and green. An acute case of this nature has often occurred where part of a crop of sugar beets have been left in the ground. The large amounts of sugar turning to acetic acid makes conditions bad for the following crop, usually corn or oats. Even the tops of the beets and the small roots naturally left in the ground can give rise to this condition if lime carbonate is not present. It is this thing which is largely responsible for the reputation sugar beets have for being hard on the land.

Lime for Plant Food

Calcium and magnesium, the basic constituents of limestone, are two of the ten essential elements of plant food; and it is well enough established that acid soils do not furnish enough of these elements for building material in many

plants; the crop yields being cut short on that account. A ton of clover or alfalfa hay contains calcium and magnesium equivalent to about 100 lbs. of limestone. Unless the readily available carbonate is present there is seldom enough calcium and magnesium made soluble in the course of a season to supply a growth of 4 tons per acre of alfalfa.

It has been well shown that crops grown on acid soils are much lower in their lime content than those from limestone soils, a matter which influences to an important extent the problem of a sufficient supply of lime in the feed of domestic animals and even people. In fact, this whole question of limestone for soil improvement has its most important bearing as related to the subject of human nutrition.

Limestone and the Availability of Phosphorus and Potash

In limestone soils the phosphorus present is largely in the form of calcium phosphate, while in acid soils it is present mainly as an aluminum phosphate. The latter forms are much less available than calcium phosphate and so on well limed lands a given phosphorus content counts for more than the same percentage in acid soils. Gaither at the Ohio Experiment Station has shown that even comparatively light applications of lime to the experimental plots at Wooster has markedly increased the percentage of phosphorus soluble in weak acids.

When soluble phosphates, such as acid phosphate, are applied to acid soils the phosphorus is largely precipitated as iron and aluminum phosphate; but if limestone is present the precipitate becomes calcium phosphate.

As regards potash a liberal application of limestone to some extent causes a replacement of potassium in silicates by calcium, thus making potash available. This effect, however, is sometimes overestimated. It is of practical importance only after liming has been continued for some time.

Limestone Improves Tilth

Some heavy clay soils here and there have been found to behave physically in a manner different from the rule for clays. Instead of contracting into stony lumps after being puddled they fall apart into a mass of crumbs, into an ideal condition of tilth. A high lime content is invariably found to be the cause of such behavior. Notable examples of such clays are the "buckshot" soils of Mississippi and Louisiana. They can be plowed while wet and crops planted in the mud; yet on drying they resolve into crumbs, "buckshot," and produce big crops.

The application of lime to acid clay soils, while not resulting in such marked

conditions as the above, does always work in the direction of better tilth. It results mainly from the flocculating effect of the lime in solution on the fine clay particles, causing these to hang together in loose aggregates and compounds of these aggregates, producing a crumbly structure.

Playing Safe with Limestone

There is scarcely any danger of a too extensive or too heavy use of limestone on farms in eastern United States. It is poor business to put off its use until its need is reflected in the condition of crops, perhaps a partial failure of clover. The loss thus sustained far outweighs the expense of using it a little previous to profitable returns.

Illinois Soils Need 50 Million Tons of Lime!

SPEAKING BEFORE a meeting of farmers in Knox County, Illinois, Prof. G. Readhimer, a state agricultural expert said:

"On ordinary normal soils, like that of upland and timber lands, there are three elements necessary in the soil to produce good crops. If they are not present he must know how to supply the deficiency. Of ten elements, he should see that the soil contains the proper proportion of lime, organic matter and phosphorus. If we have these three elements present in large amount, the land will be productive. The other soil elements exist in 95 per cent of Knox county soils. Nearly all our soil is deficient in lime, and much of it is too sour to grow clover. Without clover our land cannot be efficient.

"We must correct this condition. The ordinary land needs about five tons of lime per acre, and that means 50 million tons should be used in Illinois alone, where we are now using only 400,000 tons. There are thirty counties in southern Illinois where clover is unknown except where limestone has been mixed with the soil. The second element which is badly needed is organic manure, including barnyard manure, corn stalks, straw and plow-under clover, which also supplies nitrogen. The third element in which Knox county soils are deficient is phosphorus. This is corrected by the addition of rock phosphates."

New York Potash Market

NEW YORK—Moderate sales of chlorate of potash for export account are reported May 28. Prices continue at 25 to 30 cents a pound for prime American material. Limited quantities of yellow prussiate of potash are on the market at 30 to 35 cents. Red prussiate of potash is quoted at 85 to 90 cents, and small quantities only are obtainable.

Concentration of Public Building Programs is Urged

Construction Activity Steadily Increasing Throughout Nation

PHILADELPHIA, PA.—Recent reports from all sections of the United States indicate that, after a protracted period of hesitancy by consumers of construction materials, business is now steadily increasing. Building permits throughout the United States were 6% normal in November, 1918, 10% in December; 20% in January, 1919; 40% in February; and 65% in March.

This partial resumption of the construction business has not been accompanied by a decline in the prices of construction materials. Between October, 1918, and March, 1919, there was a very slight decrease in the prices of some commodities. Since March, prices in many lines have advanced. The composite index figure on 313 commodities given by Dun's Review was about 207 for October 1, 1918; about 197 for March, 1919; about 200 for April 1, and about 203 for May 1. The advances in prices of construction materials have in some instances exceeded this average, owing to the fact that the composite advance in the prices of construction materials was only 84% in November, 1918, as compared with an average advance in the prices of all commodities of 116% at that time.

Building Material Prices Must Advance

The failure of construction material prices to advance beyond 84% while the average of all prices advanced to 116% was due to building in activity during the war. Business men now generally concede that the nation is on a permanently higher price level. And construction material prices are at this time slowly rising to that level.

This fact makes it practically certain that the cost of construction will steadily advance during the next several months when it is expected that prices will have risen to the new level, after which they will fluctuate within narrow limits as under past normal business conditions.

Investigation reveals the regrettable fact that the increase of building construction during the past few months has been due to private initiative and not to the construction of public works. Bolstering up prices by useless public expenditure is always to be discountenanced; it is, however, generally admitted that the Federal and State Governments and Municipalities could now proceed with the construction of necessary and desirable public works in order

to facilitate the resumption of general business.

Concentration by Governments on Public Works

To this end, the National Federation of Construction Industries proposes that the United States Government and the several states and municipalities should concentrate into the immediate future their programs of public works which normally would be extended over the next several years. The saving to the country resulting from a quick general resumption of normal business, following

the stimulus of large public activities of a legitimate nature, will many times offset the saving effected by the several government departments through their present policies of retrenchment or very limited purchase.

There is but little if any doubt in the minds of the leading business men of this country that the next few years will be a period of great activity and prosperity. Such being the case, a less than normal amount of public works construction during these years would be highly in order because labor and industry would be fully employed with private affairs. But in the meantime and until the business of this country has gotten back to a normal basis, the Congress of the United States and the several states and municipalities should take up the slack in business by providing for concentrated programs of public works.

New Orleans Sand and Gravel Man Guarantees Price Against Decline

Walter Jahncke, of the Jahncke Service, Inc., Defends Present Prices Before Investigating Committee

NEW ORLEANS, LA.—The Jahncke Service, Inc., dealer in sand, gravel, shells, cement and building materials, in an announcement, declares that it will guarantee its prices against a decline before Dec. 31, 1919.

"This is done with a desire to stabilize and encourage building activities," the statement read, "and in conformity with the statement made by Walter Jahncke, before the committee named by Mayor Behrman to investigate prices on building material.

"This applies only on deliveries made on and after the date of the decline, based on written acceptance covering any specific job, and will not apply to deliveries made prior to the date of decline.

Sand Men Not Profiteering

It developed at the mayor investigating committee meeting that if someone in New Orleans is making an enormous profit on building materials it isn't the producer and dealer in sand and gravel, according to the testimony. Several dealers showed by figures that they have been making a very small profit, if any at all. Several of them said they would welcome a return to pre-war conditions when prices on sand and gravel were much less than at present, and the profit was much greater.

Robert A. Thompson, manager of the J. W. Thompson Co., and S. B. Coleman, of the Acme Sand and Gravel Co., united with Mr. Jahncke in saying that

the sand and gravel business is unprofitable in New Orleans. Mr. Coleman said that the war has doubled labor prices. Mr. Thompson said he had stopped selling sand in New Orleans, as there was nothing in it for him.

Freight Rates Blamed

In a written statement submitted to the committee, Mr. Jahncke quoted figures showing pre-war and prevailing prices of sand and gravel in New Orleans. He declared the cost of production had increased more than 100 per cent while the average increase here on sand and gravel has been 28.3 per cent. He said the proper place to start a possible reduction to consumers is in excessively high freight rates, and characterized charges of profiteering on sand and gravel as "unjust" and "untimely."

Mr. Jahncke also announced that his company would guarantee their prices against decline before December 31, 1919. He explained this, saying that if a customer contracted to buy goods, and the price went down before the contract was executed, he would be given the material at the reduced price. But if the price went up, the customer would still get the goods at contract price, he said. Mr. Jahncke told committee members he thought if all contractors and dealers would adopt this policy it would do away with the present building standstill, caused by people waiting for the price of materials and labor to drop.

Construction Work Gets Its Stride In New York City

Volume of Building Greater Than Was Expected—Prices Now Advantageous for Investors

NEW YORK—With builders and supply men of the metropolitan district increasing their forward buying the post-war construction era seems to have finally got its stride, according to the Dow Service Daily Building Reports.

The change has been particularly noticeable to the trade within the last ten days. There are many influences operating in favor of the investor who can get into the market for his materials this month. The fact that basic structural materials are all in an advantageous position with regard to immediate orders on present prices and supply is tending to foster prompt procedure with building plans.

The volume of work that is actually ready to proceed is greater than was expected in the light of price levels now ruling, but the freer improvement in buying is attributable to the investigations recently made by investors, architects and building material distributors of the actual conditions of supply in manufacturers' hands and at distributing centers. Private detective agencies having been employed in some cases to obtain for prospective purchasers the actual conditions at producing centers. In each case where such recourse has been made for confirmation of facts, complete confirmation of market reports has resulted. In consequence forward buying even at present price levels has notably increased with more to follow promptly.

Labor Agreements

Notable among the elements conspicuously controlling the future building market is the attitude of the heavy contractors toward labor agreements. There is a strong inclination toward short term wage contracts, some only for the remainder of this year, while others insist upon contracts on wage scales and labor conditions terminating on January 1, 1921. There seems to be an increasing feeling that the Presidential election will have a bearing upon the labor and wage situation as a whole and that if the reaction comes at all it will come next year. Building trade employers have been conferring on the matter. There are many interests, however, who desire no change in the longevity of the wage agreements between labor and employers.

The impression seems to gain ground week by week that those who contemplate big building work will operate to

their own advantage better if they begin work at once.

In the New York market this turn has become so pronounced as to have had an effect upon the pulse of some material prices, although actual gains so far are few.



A. J. R. Curtis

Portland cement mills reflect the recent change. While it is too early to quote the May statistics, the belief is general that May will show the biggest volume of orders and shipments since the same month in 1917, with production still behind potential orders and with limited stocks on hand.

Holding to Their Prices

Fabricated steel mill capacity under order in May will probably be in the neighborhood of 32 per cent. More orders and larger specifications are being placed with the big mills. Open markets are talked of, but stable prices are more to be expected even though the mills are hungry for business. Cases are known where orders have been refused rather than make concessions, by both large and small mills. Nobody knows what costs will be when labor is as restless as it is and steel manufacturers are holding firm at safe levels.

There is to be a nation-wide drive for greater use of cast iron pipe, columns and sewer conduits.

Freight movements are approximately 20 per cent below what they were at this time last year.

Cement Association to Make Drive for Farm Business

THE PORTLAND CEMENT ASSOCIATION has issued the following bulletin:

In recognition of the broadening opportunities for promotion in the field of cement products and farm uses of concrete, the Portland Cement Association has recently organized at its headquarters at Chicago, the Farm and Cement Products Bureau. The new department absorbs several former bureaus and the facilities thus made available are to be concentrated on a general campaign for cement products on the farm and for small general uses of concrete throughout the country. A. J. R. Curtis, who has been in charge of the educational and farm promotion work of the association for the past few years, is manager of the new bureau.

The farmer will no doubt be a very large purchaser of cement products during the coming months. His bushel of wheat which was exchanged for 21 feet of concrete drain tile in 1914, pays for 45 feet of the same tile today. The concrete silo which cost 778 bushels of corn in 1916, cost only 510 bushels of corn in 1918. In general the financial condition of the farmer is so much better today than it was a year or two ago, that the wobbly wooden silo which appealed then because of lower first cost doesn't interest him now. His choice is some permanent type—monolithic, cement stave or block.

Large as it is at present, the field for the promotion and sale of cement products gives promise of great immediate expansion. The Farm and Cement Products Bureau of the Portland Cement Association, 111 West Washington Street, Chicago, is at the service of present and prospective products manufacturers and welcomes at all times the opportunity to co-operate in working out manufacturing and selling problems.

Test Fireproof Coatings of Concrete Columns

WASHINGTON, D. C.—The Bureau of Standards has completed a series of preliminary tests of reinforced concrete columns at the laboratories in Pittsburgh, and a report will be issued in the near future. The tests of fire resistance of concrete columns have been completed: but three new columns have been made, one being a gravel concrete column cast in a gypsum form; another a gravel concrete column cast in a form made by plastering a metal lath which had been wrapped around a spiral reinforcement.

New Brunswick Gypsum Industry

Quarry Mine and Mill Operations

THE NEW BRUNSWICK GYPSUM industry is centered at Hillsborough, Albert County, and is controlled by the Albert Manufacturing Co.

There was a slight falling off in the quantity of gypsum manufactured during the last year of the war, 28,000 tons in 1917 and 25,825 tons in 1918—and a marked falling off in shipments of rock, 5,000 tons going to the United States in 1917 and only 1,600 tons in 1918. This is accounted for by the lack of available shipping, but it is worthy of note that the policy of the company is towards conservation of their crude rock for manufacturing purposes in Canada, rather than for shipping it to be manufactured abroad. Owing to a business affiliation with American mills it has been necessary to ship crude rock but records state that in future these shipments will be very much reduced for the benefit of the Hillsborough mill.

Halifax Explosion Made Business

Because of the little building in Canada and the United States this past year, plaster shipments would have been much less than was actually the case had it not been for the disastrous explosion at Halifax. This resulted in a large demand for building material, including wall plaster, and prevented what would probably have been a very lean year. The taking over of the Albert Railway of the Canadian National Railway System has very much improved the supply of cars and relieved the problem of transportation.

The quarries of the Albert Manufacturing Co. are located four or five miles to the northwest of the village of Hillsborough. The soil right of these quarries is held by the company as well as the mining rights, the latter obtained from the Crown. These rights are in the form of 20 year leases renewable up to 80 years. Output on three leases was 24,785 tons; on another some limestone for building purposes was produced, and development work was done on others. The total area of these leases is about nine square miles.

Much Development Work

The company finds it necessary to do a good deal of prospecting and development work in advance of their actual operations. There is considerable anhydrous rock similar in appearance to the plaster rock, but of little or no value except for road metal and it is necessary to arrange to avoid this so far as possible. Some of the quarrying is in the open on cliff faces of the hills while

other of the rock is taken out by mining under the room and pillar system.

Largest Plant in Canada

The best white gypsum is obtained from the mines. The rock is graded where quarried or mined, hauled a short distance in carts to a narrow (40½-inch) gauge railway owned by the company and taken direct to the mill at Hillsborough. This mill is said to be the largest of its kind in Canada and is the third one on the present site, having been erected in 1912 after the destruction of its predecessor by fire. The company has its own power and electric lighting plant and is equipped to crush and calcine about 150 tons of rock per day.

The crude rock is brought in by the narrow gauge railway, dumped into a crusher, elevated to a magnetic separator, where bits of iron or steel are removed, passed to a rotary crusher, again elevated to bins of three different grades. The gypsum then goes to vertical emery mills for re-grinding. Part of this product is bolted and used in the

raw state as terra alba, the poorer grades used for land plaster, but the bulk of it is carried by belt conveyor to bins and from them to four 55 barrel calcining kettles. After calcination the product is dropped to the cooling bins and then elevated and graded by separators by bolting.

Various Plaster Classifications

The oversize particles from the separator are turned back for re-grinding and the other is then made up into various trade products of the mill. These products are put up in several different ways to suit local demands, but they may be generally classed as:

Calcined Plaster, graded, coarse, No. 2, F, FF, FFF and Dental Plaster, in barrels.

Hard Wall Plaster, a mixture of hair, and retarder to prevent quick setting.

Terra Alba, used as a paper filler, in barrels.

Land Plaster, raw ground in bags and barrels.

Natural gas has been used as a fuel up to the present time with great satisfaction, but owing to the necessity of conserving this product the company is now obliged to use coal.

The company's cooperage supplies the necessary barrels for their product.

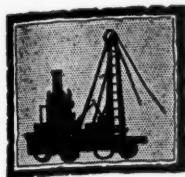
Sand-Lime Brick Production in 1918

Holds Its Own Under War Conditions—Michigan the Leading Producer

A REPORT ON THE PRODUCTION of sand-lime brick in 1918, prepared by Jefferson Middleton, of the United States Geological Survey, Department of the Interior, now in press, shows that this industry, in common with other building-material industries, suffered a decided setback last year. The production was 98,399,000 brick, valued at \$883,929, a decrease in output of 89,147,000 brick, or 48 per cent, and in value of \$536,401, or 38 per cent, compared with 1917. Though the decrease in output is large, it is not less than the decrease in general building, and it shows that the sand-lime brick industry was getting its share of business in 1918, although many sand-lime brick plants were so far away from Government buildings which were then under construction that they were unable to compete with nearer plants that could furnish other kinds of building material. The output in 1918 was the smallest since 1905, and was 128,945,000 brick, or 57 per cent, less than that in 1916, the year of greatest production. The

principal causes of the decrease were the scarcity and the high cost of material and labor, the difficulty of obtaining transportation, and the governmental restriction on the use of fuel and on building operations.

Sand-lime brick was marketed by 42 operators in 18 states in 1918, a decrease of five operators and one state—Kentucky—compared with 1917. Michigan in 1918, as for many years, was the leading state and reported an output of 22,564,000 brick, valued at \$198,633, or nearly one-fourth of the total output and value. The output in this state in 1918 decreased 25,434,000 brick, or 53 per cent, and the value decreased \$172,090, or 46 per cent, compared with 1917. Minnesota, which produced 12,255,000 brick, valued at \$90,212, was second in output but third in value. The average price per thousand of common sand-lime brick in 1918 was \$8.94, compared with \$7.54 in 1917; that of face brick was \$11.35, compared with \$9.36 in 1917.



NEW MACHINERY EQUIPMENT



New Line of Small Air Compressors

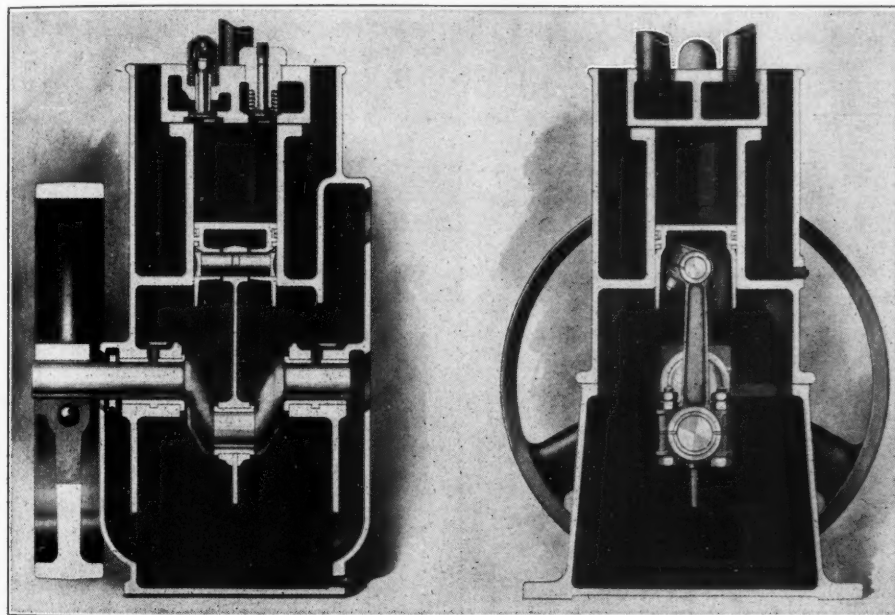
THE Ingersoll-Rand Co., New York City, has recently placed on the market a new line of small air compressors adaptable for use in operating hand hammer drills in quarries and gravel plants and for furnishing air for the various other uses of compressed air about a quarry plant.

There are four sizes and the capacity range runs from 3 to 45 cu. ft. per minute at pressures to 100 lbs. per sq. in.

with water-cooled cylinder of the reservoir type, for continuous operation. Larger machines are water-cooled only, employing the reservoir jacket system except that, in the case of the largest size, a closed jacket for connection to pressure system is optional. In this connection the reservoir cylinder is so designed as to afford unusually ample water capacity and both cylinder barrel and head are cooled. The manufacturer states that a single filling of the water space will suffice for a 10-hour day's run.

In general design the "Imperial Fourteen" compressors reminds one strongly of an automobile engine. There is the same drop forged crank shaft and connecting rod, the die cast renewable bearings, the automatic splash lubrication system and general ruggedness and simplicity which have come to be recognized as guarantees of satisfactory service under all sorts of conditions.

It is claimed by the manufacturer, however, that these little units were designed to meet exacting efficiency tests and that, while simplicity was sought, efficiency was the requirement.



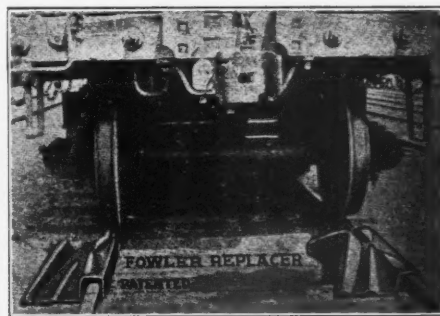
Details of a new Ingersoll-Rand air compressor

The small compressors can, however, be used for pressure requirements up to 200 lbs. per sq. in., the horsepower needed being, of course, slightly increased. They are single acting machines of the vertical type built for belt drive. Where driven from a line shaft, tight and loose pulleys are supplied; where the use of an independent motor is planned they are ordinarily furnished as a unit complete with motor, endless belt and short drive attachment. In the latter case a hardwood base plate is included with the standard equipments.

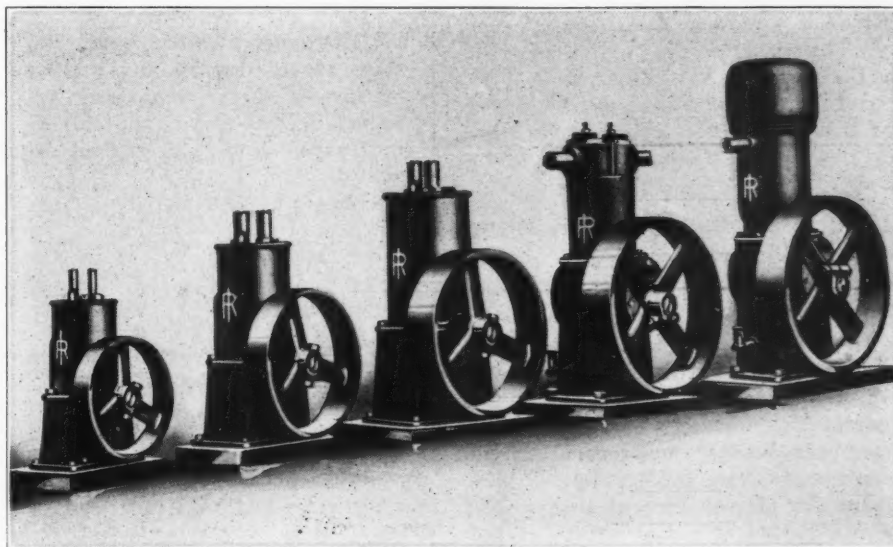
The machines are claimed to be so well balanced as to operate satisfactorily if bolted to any solid flooring, but where permanency of installation is desired the building of a concrete foundation is advocated. The smallest size is built with ribbed cylinder for air cooling where the service is intermittent and

Replacers for Cars

THE TRACK EQUIPMENT CO. of Huntington, W. Va., are producing a car replacer especially adapted to use in quarries and gravel pits.



It is simple in construction and the manufacturer claims that users are finding it quick and positive in results. To re-rail the car, the replacers are simply laid over the rails. The engine and cars run over the replacers without damage.



Graduation of sizes in new line of small air compressors

General News From the Rock Products Markets

Ohio Chemical Concern to Erect Crushing Plant

ZANESVILLE, O.—Following the purchase of the W. F. Lenhart farm of 130 acres near White Cottage, Ohio, by the Columbia Chemical Co., announcement was made that the company will begin the construction at once of a half million dollar plant for the removal of limestone from their holdings in that territory. The company now owns 300 acres, having acquired other farms together with the holdings of the Fultonham Stone Co. About \$20,000 was involved in purchasing the Lenhart farm.

The plant will have a capacity of 30 cars of crushed limestone a day and the entire output will be used for the manufacture of chemical by-products in the company's plant at Barberton.

New Concern Will Barrel Mixed Sand and Cement for Concreting

BLOOMINGTON, Ind.—W. Edward Showers and Harry Johnson, are to start a \$100,000 gravel business. The Johnson-Showers company recently purchased 40 acres of gravel land three miles north of Bloomington, along the Pennsylvania railway. The company will equip the plant with the latest machinery for getting out the gravel and will sell graded gravel to the trade. They will also specialize on gravel for gravel roofing.

It is the intention of the company to install furnaces for drying graded gravel, mix the same with cement in proper proportions and barrel it for sale as a prepared product for use. This is a new industry and the promoters say that there is nothing like it in the country. The gravel on the land now owned by the company has been examined by gravel experts who pronounce it to be the cleanest and best gravel in the state for the purpose for which it is to be used.

Illinois House Votes for More Money for Roads

SPRINGFIELD, Ill.—The Illinois House has adopted an appropriation of \$17,717,250 for road building and maintenance. This is in addition to the \$60,000,000 bond appropriation and the Federal-Aid measure. These later bills have been held up on account of an amendment offered by Mr. Shurtliff providing that 50 per cent of these roads be constructed at a cost not to exceed \$18,000 per mile and recommending the use of macadam with asphalt filler.

How to Get Freight Rate Reduction on Road Work

ON THE ADVICE of the officials of the Railroad Administration at Washington the Department of Public Works, Division of Highways, of the State of Illinois, has issued a circular letter to all contractors handling state, county and municipal roadwork, calling their attention to circular 9 of the Division of Traffic of the Railroad Administration.

This circular authorizes all railroads to reduce existing rates on sand, gravel, crushed stone and slag 10 cents per ton, as promised in the Director General's announcement of April 11 (see Rock Products, April 26, 1919, p. 17).

In order to take advantage of this reduction the Illinois Division of Highways advises that:

"Shipments of material should be consigned by the shipper to the state, county, township or municipal government, as the case may be, in care of the contractor, in case the work is being constructed by contract. An accredited agent of the branch of government involved should present to the railroad freight agent when the transportation charges are paid (freight charges may be paid by the contractor) a federal tax exemption certificate properly made out and signed, which should, in accordance with the instructions issued by the Railroad Administration entitle the state to tax exemption on all materials and freight reduction on those above specified.

"Governments other than the state should prepare and present certificates of the same form but so modified as to be applicable to the branch of the government involved.

"We are advised that some modification of Circular No. 9 and the above method of procedure are being considered by the Railroad Administration."

Error in Demurrage Announcement

THE ANNOUNCEMENT on page 38 of ROCK PRODUCTS May 10, that demurrage rates had been reduced was in error. The railway committee has recommended the reduction, but it hasn't yet got by the Director-General.

Indiana Is Allotted 215 War Department Trucks

INDIANAPOLIS, Ind.—The federal roads bureau, department of agriculture, has designated a second allotment of war department trucks which will be supplied free to the Indiana state highway commission. Sixty-six trucks are in this allotment, and are reported as "not new but serviceable."

This allotment makes a total of 215 trucks now designated for the Hoosier commission. The trucks have an aggregate capacity of 451 tons and the list prices aggregate \$672,000. Some of the trucks have special equipment. They will be used by the state commission's maintenance department next year. It is expected that more trucks will be received.

The board of county commissioners, Marion county, Indiana, have let contracts for the construction of five roads aggregating \$348,743 covering a little over twelve miles. Bids on two roads were rejected because they exceeded the surveyor's estimates.

New Highway Bills Before Present Congress

WASHINGTON, D. C.—Under the terms of a bill which has been introduced into Congress by Representative Ferris of Oklahoma, \$400,000,000 would be appropriated during the period ending June 30, 1921, for the use of the Post Office department in aiding the states in the construction of rural post roads.

One hundred millions of this sum would be available immediately, and \$150,000,000 during each of the coming two fiscal years.

Another measure, introduced by Congressman Walsh of Massachusetts, authorizes the Chief of Ordnance of the War Department to enter into agreements with the states relative to repairs to public highways and the cost thereof.

Under this measure, the War Department could pay not to exceed 50 per cent of the cost of the reconstruction or repair of any public highway, made necessary principally by reason of the increased use resulting from the location, construction or extension of any government facility in the immediate locality adjacent to or served by such highway.

The roads of the country, during the war, have been subjected to heavy traffic through the use of army truck trains and the establishment of the large concentration camps, and it is the thought of Mr. Walsh to have the Government help bear the burden of putting these roads into shape for peace time traffic.

General News From the Rock Products Markets

Proposes Higher Tariff on Imported Stone

WASHINGTON, D. C.—Increased duties on granite, freestone and other stones imported into the United States have been proposed as a means of providing revenue by Representative Wason of New Hampshire, in a bill he has just introduced into Congress.

Congressman Wason, who comes from a stone producing district, would have the rate of duty on imported freestone, granite, sandstone, limestone and all other monumental or building stone, except marble, breccia and onyx, not specially provided for in Section 1 of the tariff act of 1913, except those imported from the Philippine Islands, Guam and Tutuila, 50 per cent ad valorem for hewn, dressed, polished, or otherwise manufactured stone, and 10 cents per cu. ft. for unmanufactured or not dressed, hewn or polished stones.

French Revoke Restrictions on Importations

THE WAR TRADE BOARD announces that a French Ministerial Decree published May 21, and effective May 25, revokes the general prohibition against importation into France of numerous commodities, including building stone worked, carved, modeled or polished (except lithographic stone); stone marbles, millstones, lime, cement, slag and coria. These items are numbered respectively in the French customs tariff: 177, 177, 178, 184, 185, 220.

Coal Orders and Shortage of Cars in Prospect

IN PARTIAL CONFIRMATION of the report published in the previous issue of ROCK PRODUCTS (page 41), regarding the prediction of a Northwestern railroad man of a shortage of open top cars, the latest issue of the Black Diamond states:

"That the warning uttered by the coal men all over the country has a solid basis is developed by the fact that in New England the retail dealers are finding difficulty in placing orders for the prepared sizes of anthracite. A good many of the wholesale and local representatives of the big companies have taken all of the business that can be handled within the next five or six months."

The Northwestern railroad official had declared that the movement of coal would begin in large quantities about July 1, and that a shortage of cars would follow in consequence.

Nebraska Potash Companies Are Consolidated

LINCOLN, NEB.—A new potash company has been organized in Lincoln with a capital stock of \$4,000,000, under the name of the American Potash Co. The American and Western potash plants, both located at Antioch, are merged in the new company, with W. E. Sharp, president; H. E. Sidles, vice-president; Charles A. Stuart, secretary, and F. J. Sharp, treasurer.

The company is composed mostly of Lincoln men, although incorporated under the laws of Delaware. The directors of the new company are:

W. E. Sharp, president of the Lincoln Traction Co., Lincoln; H. E. Sidles, president of the Nebraska Buick Auto Co., Lincoln; Charles A. Stuart, investment banker, Lincoln; F. J. Sharp, chief secretary of the Royal Highlanders, Lincoln; S. A. Foster, president of the Foster Lumber Co., Lincoln; W. H. Ferguson, grain, Lincoln; A. S. Raymond, president of the Lincoln Drug Co., Lincoln; C. D. Mullen, investment banker, Lincoln; A. R. Talbot, head consul of Modern Woodmen, Lincoln; T. H. McWilliams, life insurance, Omaha, and E. C. VanDiest, president of the Inter-Mountain Light and Power Co., of Colorado Springs, Colo.

Potash Imports From Alsace in April

AN IMPORTANT EVENT of April was the importation by New York parties of 100 tons of Alsatian potash. Rumors were current that the consignment was much larger. This quantity can not be said to be sufficient to affect the domestic market. It was reported that the potash was offered at \$125 per ton.

During the early part of April, Nebraska potash was quoted at \$3 per unit, and California material at \$2.75 per unit, but toward the middle of the month, with a weak market, the Nebraska product was offered as low as \$2.50 and it was reported that some sales were made as low as \$2. With the exception of the small importation of Alsatian potash, the American product had the entire market throughout the month.

The demand for potash salts has been so unsatisfactory that all the Nebraska plants have closed and certain of the large operators in California and Utah are also reported to have suspended operations. An organization has been perfected among the potash producers who are planning to protect their industry.

Taxing of Sand at Issue in Pennsylvania

HARRISBURG, PA.—The question whether taking out sand can be considered as manufacturing as far as state taxation purposes are concerned is among those which are listed for argument before the supreme court, which has begun its annual sitting in this city. The question arises in an appeal of a sand and kaolin company from assessment of state taxes, the contention being that it is a manufacturing company and that it therefore is exempt from the state capital stock tax.

National Crushed Stone Association Has Machinery Exchange Bureau

ACTING ON THE DECISION of the Buffalo convention of the National Crushed Stone Association, A. P. Sandles, executive secretary, has established a machinery exchange bureau for the disposal of second-hand or unused equipment. The May 7 Bulletin of the association carries a list of 24 such pieces of equipment, including drills, motors, steam engines, pump diaphragms, etc.

High-Calcium Lime To Be Made in Manitoba, Canada

THE MANITOBA GYPSUM CO., operating at Gypsumville and Winnipeg, has secured a considerable acreage on the shore of Lake Winnipegosis about six miles from the town of that name. The area is underlain by a high-grade limestone carrying 98.2 per cent of calcium carbonate, together with small quantities of magnesium carbonate and argillaceous materials.

It is the intention of the company to ship 1,000 tons of this material to Winnipeg during the coming year, to be used in the manufacture of plaster, the Manitoba Gypsum Co. being a large producer of a considerable variety of lime and gypsum plasters. The use of this raw material from a Manitoba locality is of special interest, as hitherto the material which this production will replace was imported.

Below is an average of three analyses of the high-grade limestone now being quarried near Winnipegosis by the Manitoba Gypsum Co. for use in their manufacturing plant in Winnipeg: Silica, 0.41 per cent; ferric oxide, 0.11; alumina, 0.20; magnesium carbonate, 0.66; calcium carbonate, 98.25.

The Rock Products Market



Agricultural Limestone Wholesale at Plant, per Ton

EASTERN:

Coldwater, near Rochester, N. Y.—Analysis: CaCO ₃ , 56.77%; MgCO ₃ , 41.74%—80% thru 100 mesh; ppr., 4.50; bulk.....	3.00
Hillsville, Pa.—Analysis, CaCO ₃ , 85%; MgCO ₃ , 1½%—(70% thru 100 mesh) in 80 lb. ppr. bags, 4.25; bulk.....	2.75
Lime Kiln, Md.—50% thru 50 mesh; bulk.....	4.00
Pownal, Vt.—(50% thru 100) Analysis, CaCO ₃ , 90%; MgCO ₃ , 5%; ppr., \$4.50; bulk.....	2.75
West Stockbridge, Mass.—(50% thru 100) Analysis, CaCO ₃ , 90%; MgCO ₃ , 5%; ppr., \$4.50; bulk.....	2.75

CENTRAL:

Alton, Ill.—(Pulv. and 90% thru 50 mesh; 90% thru 4 mesh) Analysis, CaCO ₃ , 96%; MgCO ₃ , 75%.....	2.00
Bedford, Ind.—(90% thru 10 mesh) Analysis, CaCO ₃ , 98.5%; MgCO ₃ , 0.5%.....	1.75
Canton, O.—100% thru 10 mesh; 49% thru 100; 59% thru 50.....	3.00
Columbia, Ill., near East St. Louis—(½" down).....	1.25@1.80
Elmhurst, Ill.—(Analysis, CaCO ₃ , 35.73%; MgCO ₃ , 20.69%) 50% thru 50 mesh.....	1.25
Greencastle, Ind.—(Analysis, CaCO ₃ , 98%) 50% thru 50 mesh.....	1.75
Howenstein, O.—100% thru 10 mesh; 59% thru 50; 39% thru 100.....	2.75@3.00
Lannon, Wis.—(90% thru 50 mesh) Analysis, 54%, CaCO ₃ ; 44%, MgCO ₃	2.00
Marble Cliff, O.—(50% thru 100 mesh) Analysis, CaCO ₃ , 86%; MgCO ₃ , 8%.....	3.00
Marblehead, O.—(Analysis: CaCO ₃ , 95.33%) 50% thru 100 mesh.....	3.00@4.50
Milltown, Ind.—Analysis, CaCO ₃ , 98%.....	1.50
Montrose, Ia.—(90% thru 100 mesh).....	1.25@1.35
Muskegon, Mich.—(90% thru 50 mesh) Analysis, CaCO ₃ , 53.35%; MgCO ₃ , 43.27%.....	2.50
Piqua, O.—(50% thru 100 mesh).....	2.50@4.00
Rockford, Ill.—Analysis, CaCO ₃ , 53.75%; MgCO ₃ , 44.35%.....	1.25
Stolle, Ill. (near East St. Louis on I. C. R. R.)—(Thru ½" mesh) Analysis, CaCO ₃ , 89.61 to 89.91%; MgCO ₃ , 3.82%.....	1.50
Stone City, Ia.—(50% thru 100 mesh) Analysis, CaCO ₃ , 98%.....	.50
Toledo, O.—Analysis, CaCO ₃ , 52.72%; MgCO ₃ , 43%—(20% thru 100 mesh; 30% thru 50; 80% thru 100; 100% thru 5/32 screen).....	1.80
Whitehill, Ill.—Analysis, CaCO ₃ , 96.12%; MgCO ₃ , 2.50%—50% thru 100 mesh, bulk.....	1.50
90% thru 100 mesh.....	5.00

SOUTHERN:

Cartersville, Ga.—Analysis: 96 to 98% combined carbonates—All thru 10 mesh with all dust in.....	3.00
Dittlinger, Tex.—Analysis, CaCO ₃ , 99.09%; MgCO ₃ , 40%.....	2.00
90% thru 100 mesh.....	1.00
90% thru 4 mesh.....	1.00
Fletcher, N. C.—Analysis, CaCO ₃ , 75%; MgCO ₃ , 22%—(all thru 10 mesh; 50% thru 100 mesh)—100 lb. paper or 200 lb. burlap, \$3.60; bulk.....	2.10
Grovania, Ga.—Analysis, CaCO ₃ , 95%; MgCO ₃ , none—50% thru 100 mesh.....	2.50
Memphis Jct., Ky.—(Analysis, CaCO ₃ , 95.31%; MgCO ₃ , 1.12%) average price.....	2.00
Keystone, Ala.—(90% thru 50 mesh) Analysis, CaCO ₃ , 99.50%; MgCO ₃ , none.....	1.25

(Continued on next page.)

Wholesale Prices of Crushed Stone

Prices given are per ton. F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Auburn and Syracuse, N. Y.....	.80	1.20	1.20	1.20	1.20	1.20
Buffalo, N. Y.....	1.25		1.00 per ton, all sizes			
Burlington, Vt.....			3.00	1.75	1.75	
Coldwater, N. Y.....			All sizes 1.50			
Coldwater, N. Y.....			Flux, 1.50@2.10			
Lime Kiln, Md.....	1.00	2.00	1.85	1.65	1.45	1.25
North Leroy and Akron, N. Y.....	\$1.00 for all sizes, including R. R. ballast					
CENTRAL:						
Alden, Ia.....	.40		1.00	1.00	1.00	
Alton, Ill.....	1.85		1.45	1.35		
Belvidere, Ill.....			1.00 for any size produced			
Bettendorf, Ia.....	1.25	1.25	1.25	1.25	1.25 (2300 lbs.)	
Detroit, Mich.....			Various sizes \$1.50 per net ton			
Dundas, Ont.....	.65	1.05	1.05	1.05	.85	.85
Eden and Knowles, Wis.....		.80	1.00	1.00	1.00	
Elmhurst, Ill.....	(¾-in. 1.25)		1.00 (Sc'gs .85)		.85	.85
Greencastle, Ind.....	.90	1.10	1.00	.90	.90	.90
Illinois, Southern.....	1.50	1.25	1.25	1.25	1.10	
Lannon, Wis.....			1.00 all sizes			
Lewisburg, O.....	.80@1.00		1.00@1.10	1.00@1.10	1.00	1.00
Lima, O.....			1.10 for any size			
Linwood, Ia.....	.60	1.05	1.00	.91	.91	1.00
Mankato, Minn.....			(1-in. 1.50)	(2-in. 1.25)		
Mayville, Wis.....	.75		1.00	1.00	1.00	1.00
Oshkosh, Wis.....			1.00 in all sizes, Blue Limestone			
River Rouge, Mich.....	.85@1.15	1.15	1.15	1.15	1.15	1.15
Rockford, Ill.....	1.25		1.25	1.25	1.25	1.25
Sheboygan, Wis.....			1.00 for all sizes			
Sherman and Hamilton, Wis.....			All sizes \$1.00 per ton			
Stone City, Ia.....	.50		(1-in. 1.40)	1.30	1.20	
Toronto, Can.....	1.55		1.95	1.95	1.75	1.75
SOUTHERN:						
Brooksville, Fla.....	1.00			2.50		1.65
Cartersville, Ga.....		1.95	1.85	1.75		
Fort Springs, W. Va.....	.75	1.00	1.40	1.60	1.30	
Linnville Falls, N. C.....			All sizes, 1.35			
Mascot, Tenn.....			Railway ballast 1.10 per cu. yd.			
Memphis Junction, Ky.....			1.00 (Chatts)			
Winnfield, La.....	.60		Average 1.10	1.60	1.60	
WESTERN:						
Atchison, Kans.....	.50	1.80	1.80	1.80	1.70	1.70
Blue Springs & Wymore, Neb.....		1.45	Rip-Rap, 1.30	1.35@1.40	1.25@1.30	1.20
Dittlinger, Tex.....			1.20	1.00	.90	
El Paso, Tex.....			.90 for all sizes			
Kansas City, Mo.....	.60	1.35	1.35	1.35	1.35	1.35

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Birdsboro, Pa.—Trap.....	2.00	1.80	1.70	1.50	1.50	1.25
Branford, Conn.—Trap.....	.80	1.25	1.25	1.10	1.00	
Dresser Jct., Wis.....	.50	1.25	1.25	1.10	1.00	.95
Duluth, Minn.....	.50@.65	1.40@1.50	1.25@1.35	1.10@1.15	1.10@1.15	1.00
Farmington, Conn.—Trap.....	.80	.95	.95	.90		
Glen Mills, Pa.—Trap.....	1.00	1.40	1.70	1.55	1.40	1.40||
Millington, N. J.—Trap.....	1.80	2.00	1.80	1.60		
Morristown, N. J.—Trap.....	1.85	1.75	1.75	1.60	1.40	1.40
New Britain, Conn.—Trap.....	.80	1.30	1.25	1.25	1.10	
Richmond, Cal.—Trap.....	.50*		1.40*	1.30*		
Rock Hill, Pa.—Trap.....	1.00	1.35	1.70	1.55	1.35	1.35||
Westfield, Mass.—Trap.....	.60	1.10	1.10	1.00	.90	

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Brooksville, Fla.—Flint.....	1.00			2.50		
Fair Oaks, Calif.—Cr. Bldrs.....	.85	1.05	.95	.85	.85	
Henders, Pa.—Quartzite.....	.80	1.00	1.25	1.00	1.00	1.00||
Little Falls, N. Y.—Syenite.....	.80	1.20	1.40	1.20	1.20	1.20||
Middlebrook, Mo.—Granite.....	3.50		1.75	1.75		1.00||
Oroville, Calif.—Cr. Cobbles.....	.85	1.05	.95	.85	.85	
So. Richmond, Va.—Granite.....	1.00@1.25	1.25@1.75	1.40@1.75	1.40@1.75	1.40@1.50	1.40@1.50
Stockbridge, Ga.—Granite.....	.75	2.00	1.85	1.85	1.75	
White Haven, Pa.—Sandstone.....	.85	1.20	1.40	1.20	1.20	1.20||
*Cubic yard. †Agrl. lime. ||R. R. ballast. \$Flux. \$Rip-rap. a 3-inch and less.						

Agricultural Limestone Wholesale at Plant, per Ton

(Continued from preceding page.)

Mascot, Tenn.—Analysis, CaCo ₃ , 52%; MgCo ₃ , 38%.....	2.50
(80% thru 100 mesh).....	3.50
(80% thru 200 mesh).....	1.75
(All thru 10 mesh).....	
Paper bags, \$1.50 extra per ton; burlap, \$2.50 extra per ton.	
Tyrone, Ky.—Analysis, CaCo ₃ , 90%; MgCo ₃ , 5%—90% thru 4 mesh.....	1.50@1.75
Winnfield, La.—(50% thru 50 mesh)....	4.50
WESTERN:	
Cement, Cal.—Analysis, CaCo ₃ , 95%; MgCo ₃ , 1% (50% thru 100 mesh)....	4.00@5.00
Fresno, Calif.—(Analysis, CaCo ₃ , 94%; MgCo ₃ , .02%) 50% thru 200 mesh; 90% thru 100; 100% thru 40.	
Prices for delivery: Sacks, 6.50; bulk Sacks, 10c each.	6.00
Kansas City, Mo.—(50% thru 50 mesh)	1.10

Miscellaneous Sands per Ton at Plant

Silica sand is quoted washed, dried and screened, unless otherwise stated.

GLASS SAND:

Bowmanstown, Pa.—Glass sand.....	2.50
Gray Summit, Mo.—Glass.....	2.00@2.50
Hancock, Md.—Engine and glass.....	2.50@3.00
Klondike and Pacific, Mo.—Glass:	
Contracts	2.00
Carlots	2.50
Mapleton, Pa.—Glass, dry.....	2.75@3.00
Massillon, Ohio—Glass.....	3.00
Michigan City, Ind.—Glass sand.....	.30
Millington, Ill.—Glass.....	1.75@2.00
Mineral Ridge, O.—Glass.....	2.75
Montoursville, Pa.—Glass, green, washed	2.00@2.75
Ottawa, Ill.—Glass.....	2.00
Large contracts	1.75
All others	2.00
Sands, Elk Co., Pa.—Glass sand:	
Selected, green	2.50
Thayer, W. Va.—Glass.....	2.50@3.00

FOUNDRY SAND:

Albany, N. Y., District—Core.....	1.25@2.00
Furnace lining	2.25@2.50
Molding, fine and coarse.....	1.65@1.85
Sand blast sand.....	1.75@3.50
Brass molding	1.65@1.85
Allentown, Pa.—Core: molding fine.....	1.25@1.40
Arenzville, Ill.—Molding fine.....	1.50
Bowmanstown, Pa.—Core	1.20
Molding, fine and coarse.....	1.50
Roofing pebble, washed.....	5.00
Cleveland, O.—Core, on car.....	1.00@1.25
Molding fine, on car.....	1.75@2.25
Molding coarse, on car.....	1.50@2.25
Brass molding, on car.....	1.25@2.00
Delaware, N. J.—Molding	1.50@2.00
Gray Summit, Klondike and Pacific, Mo.—Molding, stone sawing and traction sand, contract, 1.50; carlots	2.00
Greenville, Ill.—Molding coarse red....	1.60
Hancock, Md.—Core and brass mldg.	1.65
Kansas City, Mo.—Missouri River core .....	.75
Hellam, Pa.—Core	2.00
Mapleton, Pa.—Molding, fine and core, damp	2.50
Molding, fine, dry.....	3.00
Massillon, O.—Steel molding coarse....	2.50
Furnace lining	3.00
Millington, Ill.—Core, furnace lining, damp	1.50
Furnace lining, dry.....	1.75
Roofing	1.75@2.00
Stone sawing	2.00
Mineral Ridge, O.—Core, molding, sand blast, roofing, brass molding, etc., washed, screened	2.00
Montoursville, Pa.—Core, molding fine, traction	1.25@2.00
Brass molding	1.50@2.25
Michigan City, Ind.—Core, bank.....	.30@.40
Ohio—Various points:	
Iron molding, fine.....	1.50@2.25
Iron molding, coarse	1.75
Brass molding, minimum	2.00

(Continued on next page)

Wholesale Prices of Sand and Gravel

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine Sand, 1/10 inch down	Sand, 1/4 inch and less	Gravel, 1/2 inch and less	Gravel, 1 inch and less	Gravel, 1 1/2 inch and less	Gravel, 2 inch and less
EASTERN:						
Ambridge and So. Heights, Pa.	.....	1.25	1.25	1.25	.80	.80
Attica, N. Y.	.50	.50	.65	.65	.65	.65
Boston, Mass. (wharves).....	1.25	1.00	2.50	1.75	1.65	1.50
Buffalo, N. Y. (Niagara River)	.80	.80	.75	.75	.75	.75
Farmingdale, N. J.	.43	1.75	.....	1.35	.....	.....
Morristown, N. J.	.60	1.20	1.00	1.00	1.00	1.00
North Wilbraham, Mass.	.60*	2.00*	.....	1.25*	.....	.....
Philadelphia, Pa.	.95	.....	1.40	.....	1.25	1.25
Shaw's Land'g, Meadville, Pa.	1.00	.....	.....	1.00	1.00	1.00
Washington, D. C.—Wharves....	.75	.75	2.00	1.40	1.20	1.20
CENTRAL:						
Barton, Wis.	.75	.70	1.00	.70	.70	.70
Beloit, Wis.	.....	.50	.60	.60	.60	.....
Chicago, Ill.	.....	.....	.....	.....	.....	.....
Cincinnati & Miami Grove, O.	.60@.80	.55@.75	.....	.55@.75	.55@.75	.....
Columbus, O.	.65	.65	.60	.70	.70	.65
Des Moines, Ia.	50@1.00	.50	1.50	1.50	1.25	1.25
Drake, Mo.	.65	1.15	%.90	.70	.....	.65
Earlestead, near Flint, Mich.	.55@.60	.55@.60	.....	.75@.85	.75@.85	.75@.85
Escanaba, Mich.	.....	.85	1.60	1.20	.85	.85
Fort Dodge, Ia.	1.05	1.00	1.80	.....	.....	1.80
Fort Jefferson and Mechanicsburg, O.	.50@.60	.50@.60	.50@.60	.70@.80	.70	.70
Grand Rapids, Mich.	.40	.45	1.00	.80	.70	.67
Hawarden & Doon, Ia.	.....	.50	.....	(1.20, Hawarden)	.....	1.00
Illinois, Northern .....	.60	.60	.60@.70	.60@.70	.60@.70	.50@.60
Indianapolis, Ind.	.50	.50	.....	.65	.65	.65
Janesville, Wis.	.....	.50	.....	.....	.60	.....
Mason City, Ia.	.60	.50	1.45	1.35	1.30	1.25
RAILWAY BALLAST AND ROAD WORK, .40						
Milwaukee, Wis.	.....	.....	1.25	1.15	1.10	1.00
Minneapolis, Minn.	.40	.40	1.00	1.00	1.00	1.00
Moline, Ill.	.....	.60	.85	.75	.75	.75
Montezuma, Covington, Ind.	.75	.75	.90	.90	.80	.80
Oxford, Mich.	.....	.55	1.60	1.60	1.50	1.35
Saginaw, Mich.	.95	.95	1.20	1.30	.....	1.25
St. Louis, Mo., F. O. B. cars	1.35	1.20	2.25	2.00	2.00	1.95
St. Louis, Mo. (div. in wagons)	1.90	1.90	.75	.75	.75	.75
Summit Grove, Ind.	.75	.75	.75	.75	.75	.75
Terre Haute, Ind.	.75	.75	.75@.85	.75	.75	.75
Toledo, O.	.....	.....	.60 for all sizes	.....	.....	.....
Wabash Valley District, Ind.	.....	.35	.70	.70	.70	.70
Waupaca, Wis.	.....	.70	1.60	1.10	1.10	1.10
Winona, Minn.	.....	.....	.....	.....	.....	.....
SOUTHERN:						
Charleston, W. Va. (River)....	.....	1.20	1.30	1.30	1.30	1.30
Knoxville, Tenn.	.85	.85	1.35	1.35	1.35	1.10
Lake Weir, Fla.	.50	.....	.....	.....	.....	.....
Pelzer, S. C.	.55	.....	.....	.....	.....	.....
New Martinsville, W. Va.	1.00@1.25	.60@.90	.....	.80@1.00	.....	.50@.80
Waco, Texas	.67	.67	.....	1.25	1.05	1.05
WESTERN:						
Kansas City, Mo.	.60	.60	2.10	2.10	.....	1.90
Lincoln, Neb. (on cars).....	1.00	1.00	.....	.....	1.50*	.....
Pueblo, Colo.	1.00*	.60*	1.15 for all grades gravel	1.25*	1.25*	1.25*
San Francisco, Calif.	.....	1.15	.90	.70	.70	.65
Seattle, Wash.	1.25*	1.25*	.....	.....	.....	1.10*
Sherman, Mo.	.65	.70	.....	.....	.....	.....
Vancouver, B. C.	1.10*	1.10*	.....	1.30*	.....	.....

Bank Run Sand and Gravel

City or shipping point	Fine Sand, 1/10 inch down	Sand, 1/4 inch and less	Gravel, 1/2 inch and less	Gravel, 1 inch and less	Gravel, 1 1/2 inch and less	Gravel, 2 inch and less
EASTERN:						
Attica, N. Y.	.45	.45	.45	.60	.60	.60
Boonville, N. Y.	.65	.45@.65	.....	.....	.....	.....
Farmingdale, N. J.	.....	.45@.50	.45@.50	.....	.....	.....
Pittsford, N. Y.	.....	.50@.75	.....	.....	.....	.....
Yardville, N. J.	.....	1.00@1.10	(crushed rock sand)	.....	.....	.....
York, Pa.	.....	.....	.....	.....	.....	.....
CENTRAL:						
Beloit, Wis.	.....	.60	.....	.....	.60	.....
Chicago District	.....	.....	.....	.....	.....	.....
Covington, Ind.	.....	.....	.....	.....	.....	.....
Des Moines, Ia.	.....	.....	.....	.....	.....	.....
Drake, Mo.	.....	.....	.....	.....	.....	.....
Earlestead, Mich.	.....	.....	.....	.65@.80	.65@.80	.65@.80
Escanaba, Mich.	.....	.....	1.00 cu. yd., all sizes	.....	.....	.....
Grand Rapids, Mich.	.30	.....	.....	.....	.....	.40
Indianapolis, Ind.	.....	.....	.....	.....	.....	.....
Janesville, Wis.	.....	.....	.....	.....	.55	.....
Moline, Ill.	.80	.....	.....	.....	.....	.....
Oxford, Mich.	.....	1.00	1.30	1.20	.85	1.20
Saginaw, Mich.	.....	.....	.....	.....	.....	.....
Summit Grove, Ind.	.....	.....	.50 for all sizes	.....	.60	.60
Terre Haute, Montezuma, Ind.	.....	.....	.....	.....	.55@1.00	.....
Toledo, Ohio	.....	.....	.....	.....	.....	.....
Wabash Valley District, Ind.	.....	.....	.60 for all sizes	.....	.....	.40
Waupaca, Wis.	.....	.....	.....	.....	.....	.....
Winona, Minn.	.....	.....	.....	.....	.....	.....
SOUTHERN:						
Howcott, La. (50% and up in rock content)	.....	.....	.....	.....	.....	.65
Lindsay, Tex.	1.25	.....	.....	.44	.....	.....
Waco, Texas	.....	.....	.....	(Road Gravel)	.38@.48	1.75*
Rosenberg, Tex.	1.35*	.50*@.75*	.....	.....	.....	.....
Valde Rouge, La.	.....	.....	.....	.....	.....	.....
WESTERN:						
Pueblo, Colo.	.60	.....	.....	.....	.....	.....
San Francisco, Calif.	.....	.75	.....	.....	.....	.....

* Cubic yard. B Bank. L Lake. || Ballast.

General News From the Rock Products Markets

Agricultural Limestone \$3 to \$5 in New Brunswick

TORONTO, CAN.—A member of the provincial agricultural department at an agricultural convention recently held at Frederickton, N. B., stated that the average annual application of limestone to the soil of the province was three tons per acre. While the lime is usually procured from firms in St. Johns, N. B., costing about \$5 per ton f. o. b., some small plants were supplying it to neighboring farmers at \$3 per ton.

Miscellaneous Sands per Ton at Plant

(Continued from preceding page)

Ottawa, Ill.—Brass molding.....	2.00@2.50
Ottawa, Ill.—Core, Steel Molding.....	1.75@2.00
Sand blast	2.50
Stone sawing	1.25
Ottawa, Ill.—Furnace lining, molding	
fine and coarse	1.75@2.00
Stone sawing	1.75@3.50
Ottawa, Ill.—Roofing	1.75@2.50
Ottawa, Ill.—Sand blast sand.....	2.75@3.50
Ottawa, Ill.—Traction	1.75
Ottawa and Utica, Ill.—Furnace lin'g	.85@2.00
Molding, selected	1.50@2.50
Molding, coarse	1.75
Thayers, Pa.—Core and traction.....	2.00
Wedron, Ill.—Molding .....	.75@1.00
West Albany, N. Y.—Molding fine.....	1.75
Molding coarse	1.75
Brass molding	2.25
Thayers, Pa.—Molding, fine.....	1.00@1.25
Molding, coarse, furnace lining.....	1.00

Ground Gypsum Rock, per Ton, at Plant

Castalia, O.—Raw rock, crushed, bulk,	
at 3.00; ground at, bulk.....	3.50
Fort Dodge, Ia., bulk.....	3.00
Garhutt, N. Y., in bags.....	6.00
Grand Rapids, Mich, bags.....	6.00
Oakfield, N. Y.....	6.00
Sandusky, O.....	6.00
Jute sacks, \$3.00 extra; paper, \$1.00 extra.	

Ground Rock Phosphate at Plant, per Ton

Centreville and Gordonsburg, Tenn.—	
B. P. L., 72% lump rock, ton, 2,240	
lbs.....	6.00@7.00
Centreville, Tenn.—B. P. L., 60%.....	7.00
B. P. L., 70% and 78%.....	8.00
Centreville, Tenn.—B. P. L., 65% to	
70%	7.00@10.00
Jacksonville (Fla.) District—Soft phos-	
phate	10.00@12.00
(Add 2.50 for sacks)	
Mt. Pleasant, Tenn.—B. P. L., 65%.....	6.50@7.50
Mt. Pleasant, Tenn.—B. P. L., 70%	
washed (90% thru 100 mesh).....	8.00
In 200 lb. burlap bags, 2.50 extra.	
Nichols, Fla.—Pebble—B. P. L. 67%.....	8.00@10.00
Phoslime, Fla.—Soft	14.00@17.50
Walls, Tenn.—B. P. L., 70%.....	7.00@7.75

Crushed Slag Wholesale at Plant Per Ton

City or shipping point	Screenings,						
	Roofing	¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:							
Buffalo	1.75	.85	.85	.85	.85	.85	.85
E. Canaan, Conn.....	3.00	1.25	1.50	1.15	1.10	1.10	1.10
Erie, Pa.	1.75	1.00	1.00	1.00	1.00	1.00	1.00
Emporium, Pa.	1.75	1.00	1.00	1.00	1.00	1.00	1.00
Ensley, Ala.	2.05	.90		.90@1.20	1.00	.90	.85
Philadelphia Dist.	2.50	.75	1.50	.85	.85	.85	.85
Pittsburgh Dist.	2.50	1.00	1.50	1.00	1.00	1.00	1.00
Sharpsville, Pa.	1.75	1.00	1.25	1.00	1.00	1.00	1.00
WESTERN:							
Chicago, Ill.....			All sizes, \$1.50, F. O. B. Chicago				
Detroit, Mich.....			All sizes, 1.65, F. O. B. Detroit				
Toledo, O.....			All sizes, 2.00, F. O. B. Toledo				
Youngstown, Dover,							
Hubbard, Leetonia,							
and other Ohio							
points	1.75	1.00	1.25	1.00	1.00	1.00	1.00

Why Selling Price Must Be Based on Average Annual Costs

BEN STONE, manager of the Illinois Sand and Gravel Producers Association reports: "Cost sheets filed with us so far furnish a very interesting study. While the uniform cost sheet (see ROCK PRODUCTS, April 12, 1919, p. 22) which has been provided has not met with general favor, we believe it will be of immeasurable benefit to those who make use of it. One plant reported total cost of \$1.69 per ton for the month of March; but in April, with an increased production, reduced the cost to 58.65 cents per ton. We mention this because it shows the range between a lean month and a fairly good one. The only legitimate basis for a selling price is cost plus a fair margin of profit on which to do business, and the producer who does not figure and use his cost for the lean months in arriving at an average for the year is bound to come out at the little end of the horn in the long run."

Lime Market in Some Eastern Districts

THE DEMAND for finishing lime continues light in most districts, according to Tomkins Brothers of Newark N. J. (May 20). The manufacturers of finishing hydrate who lowered their prices some weeks ago in face of war-time costs, consider themselves in a rather embarrassing position, as they were in hopes that their action would tend to stimulate demand. Finishing lime is naturally one of the last materials to benefit by increased building, and it is expected that much of the projected construction work will be ready for this commodity in a few weeks. In spite of the fact that the trend of products costs has been upward, the price remains firm.

As to masons hydrate, there has been no noticeable drop in prices since the armistice. It is reported that the manufacturers have been doing a heavy agri-

cultural trade, but this is now about over for the spring season. According to statistics, the demand for hydrated lime is increasing at the rate of about 100,000 tons a year. This increase is taken up mostly by the building trades, although a large quantity is going into chemical plants and other industries. However, hydrate can never fully take the place of "hot" lime in certain chemical processes where the heat and caustic qualities of lump lime are requisite.

Receiver Earned \$500,000 for Cement Company

PITTSBURGH, Pa.—What is considered a record case of its kind was disposed of in United States court recently, says the Pittsburgh Press, when United States Judges Orr and Thompson confirmed the report and final accounting of business of Receiver George W. Hackett, for the Castalia Portland Cement Co., with offices in the Publication building, Seventh Ave.

Receiver Hackett's report shows that since he assumed charge of the business of the company in 1916 he not only succeeded in wiping out all obligations and indebtedness, but also accumulated approximately a net profit of \$500,000. The figures in the report are computed from Sept. 30, 1916, to Feb. 1 of this year, when Hackett's receivership ended.

Road Building Activity On the Pacific Coast

OAKLAND, CALIF.—On July 1 California will vote on the \$40,000,000 bond issue for the construction and improvement of California highways. The California Good Roads Committee are planning an energetic campaign.

May 22 marked the opening of the campaign of the Yosemite Valley Highway Association to raise the \$1,000,000 needed to guarantee the construction of a paved year-round highway from Merced to Yosemite National Park.

The state of Oregon has recently awarded, through its State Highway Commission, contracts for highway improvement aggregating \$3,915,000.

Evidence that the full tide of building activity is upon us, is to be found in the increased number of contracts for building construction and street work in the various cities of the Pacific coast.

Upshur County, Virginia, Building Concrete Road

RICHMOND, Va.—The Upshur county commissioners are building in that county a ten-mile cement concrete road that will cost about \$230,000.

General News From the Rock Products Markets

Every Prospect of Unparalleled Road-Building Prosperity

HIGHWAY BOND ISSUES amounting to a total of \$819,300,000, have been or soon will be placed before the voters or legislatures in 26 of the states, according to recent figures compiled by the National Automobile Chamber of Commerce.

Of this total \$177,800,000 has already been authorized in various states as follows: Illinois, \$60,000,000; Michigan, \$50,000,000; Nevada, \$1,000,000; Oregon, \$10,000,000; Pennsylvania, \$50,000,000; Utah, \$4,000,000; Wyoming, \$2,800,000.

A total of \$411,500,000 represents issues that have been referred back to the people. Besides the \$2,500,000 for the Roosevelt Memorial Highway in Oregon, this is made up of the following: California, \$40,000,000; Colorado, \$5,000,000; Idaho, \$2,000,000; Maine, \$10,000,000; Minnesota, \$75,000,000; Missouri, \$60,000,000; New Mexico, \$2,000,000; New York, \$20,000,000; Oklahoma, \$50,000,000; Texas, \$75,000,000; Washington, \$30,000,000, and West Virginia, \$40,000,000.

Three states, Montana, South Carolina and Tennessee, defeated bond issues of \$10,000,000, \$25,000,000 and \$50,000,000, respectively.

The states in which bond issues are under consideration or are shortly to be considered, with the amounts proposed, are given as follows: Alabama, \$25,000,000; Florida, \$10,000,000; Georgia, \$60,000,000; Virginia, \$50,000,000.

Since the compilation of these figures, the voters of Oklahoma have defeated the proposed bond issue and Governor Smith, of New York, has vetoed the legislation proposing a bond issue in that state.

Petition Congressmen for the Immediate Reduction of Freight Rates

PITTSBURGH, Pa.—The Legislative Committee of the Pittsburgh Builders' Exchange has sent the following resolution to the United States Railroad Administration and representatives in Congress. This resolution was passed by the Board of Directors at their last meeting:

"Resolved, By the Board of Directors of the Pittsburgh Builders' Exchange, that we petition the United States Director of Railroad on behalf of the building industry of this city to obtain at the earliest possible moment a reduction in freight rates on building materials. It is a significant fact that the present rates on this class of commodities are from 25 to 300 per cent

above the rates prevalent previous to the war. Additions to the schedule were made as a means of curtailing the transportation of materials as a war measure.

"We believe that the necessity for these high rates has now passed and that the Government should use all possible means to aid in the recovery of the industry from its present low condition. It seems evident that the cost of building cannot be reduced through any marked lowering in prices of materials, nor level of wages, at least until there is a general downward movement in the requirements of maintaining families of working men and other economic readjustments.

"We therefore, look to the Government to afford this relief and call upon our representatives in Congress as well as the Executive Departments at Washington to use all possible efforts to this end."

Texas Has Much Building Activity

AUSTIN, TEXAS—While the development of the oil industry in a big area of Texas is contributing very much to the building trades activities, there is an unusual amount of construction work being done in the cities and the rural communities outside of the oil fields. In fact, the demand for building materials is larger than it has been for five or six years. In a number of towns situated in and adjacent to the oil localities the demand for lumber and other building materials is so great that dealers are far behind in filling orders.

Congestion of railroad traffic throughout Central West Texas is another factor that is serving as a handicap to building operations. In Dallas, San Antonio, Houston, El Paso and Fort Worth, building activities have been resumed on a pre-war basis. Many projects that were being held in abeyance during the war are now being carried out. This is true not only as to the erection of business buildings and residences but of manufacturing plants.

Several new railroad building projects are now on foot and it is expected that within a few months considerable construction of this character will be in progress in different parts of the state. Some of the large railway systems plan to make extensions of their lines in Texas when their properties shall have been removed from Federal control. New electric interurban lines are being promoted also and their construction may be started within the next few months.

New Canadian Cement Co. Plans 4,500 Bbl. Plant

MONTREAL, CAN.—The Montreal Portland Cement Co., Montreal, has purchased 54 acres at Pointe-Aux-Trembles for \$40,000. Work will soon be started on a cement plant to cost \$250,000. By September 500 bbls. per day will be produced. Eventually the production will be 4,500 bbls. The company has received exemption from taxation on 20 acres and free water at Trenton, Ont. Robert Dodd is president.

War Materials to be Used for Peace Purposes

IT IS REPORTED that the \$15,000,000 worth of T. N. T. and other explosives held by the War Department when hostilities ceased will be turned over to the Department of the Interior, to be used as a substitute for commercial dynamite, in connection with road building, construction work, etc. Should the soldiers' settlement bill be passed by the next Congress, this material may also be used in clearing lands for discharged soldiers.

Cement Orders for Export Come Unsolicited

MONTREAL—Canada Cement Co. officials, of Port Colborne, Ont., have been considerably cheered lately by the receipt of substantial export orders from the West Indies. The company has never seriously calculated on export business, and the orders, which were more or less unsolicited, are much in the nature of a windfall.

It is now likely that the company will go earnestly after business for shipment outside of Canada, particularly in the West Indies, where T. B. Macaulay, President of the Sun Life Assurance of Canada, who recently returned from the West Indies, says there is considerable to be had.

As cement, owing to the dampness at sea, is shipped in barrels instead of bags, where ocean transportation is necessary, it is likely that in the event of the expected export business developing the company will make its own barrels.

Cement Prices Advance in Toronto, Canada

TORONTO, CAN.—Cement has advanced in Toronto from \$3.70 to \$4 (bags extra). At Winnipeg the prices have advanced ten cents per bag, the prices now being \$1.30, delivered, \$1.27 f. o. b. yard and \$1.15 f. o. b. city (four sacks to a barrel of 350 lbs.). Sacks are returnable at 20 cts. each.



Passed By The Screens



Personals

Harvey H. Ward, sales manager of the Knickerbocker Portland Cement Co., Inc., New York, has severed his connection with this company.

Capt. J. Ridley Wylie, of the Canadian army, has been appointed representative at Toronto, Canada, for the Canadian Crushed Stone Corporation of Dundas, Ont., which has opened an office in that city at 409 McKinnon building. Capt. Wylie enlisted in 1915. After serving overseas, he returned in December, 1917, and since has been doing military duty in Hamilton.

Wm. A. Maddern, civil engineer, Adelaide, South Australia, was a recent visitor at the Rock Products office. Mr. Maddern is the engineer who designed and built the plant of the Adelaide Cement Co., Birkenhead, South Australia. He is spending several months in this country to study American cement plants, particularly their progress in the utilization of waste heat.

OBITUARY

Capt. Henry B. Sauerman, who was one of the organizers of the first company of army engineers in the state of Illinois, died at his home in Chicago on May 20. Capt. Sauerman was born at Crown Point, Ind., April 7, 1879. After obtaining his education at Chicago technical schools and the Michigan Military Academy, Orchard Lake, Mich., he entered the employ of Fairbanks-Morse & Co., where he remained for eleven years, first as chief draughtsman and later as contracting engineer. In 1911 he joined his brother, John A. Sauerman, in organizing the firm of Sauerman Bros., engineers and manufacturers, succeeding the H. N. Elmer Company. When the original Company A, Corps of Engineers, I. N. G., was formed on August 1, 1911, Capt. Sauerman enlisted for three years as a private, being elected Captain on July 30, 1912, and remaining in command of the company until poor health compelled his retirement at the end of his period of enlistment. From Company A, grew the 108th Regiment of Engineers, which has just returned from the front in France and Flanders. Capt. Sauerman was a member of the American Society of Civil Engineers, Western Society of Engineers and Chicago Engineers' Club. In 1918 he was awarded the Octave Chanute Medal by the Western Society of Engineers for his paper, "Fortification," which was prepared for a meeting of the society in 1916 and later published as a handbook for army engineers. Capt. Sauerman was a leading advocate of improved highways and his writings on this subject, notably his booklet, "Highways and Railways for the Defense of Our Nation," just published, attracted the highest praise.

Sand and Gravel

Employees of the Niagara River sand and gravel dredging companies are threatening to strike unless increases in pay are granted. There was a strike last fall and the employers were compelled to make large increase at that time.

The county commissioners at Salt Lake, Utah, have authorized the sale of the county's silica beds at Neff's canyon to the Utah Fire Clay Co. The company pays \$1,000 cash and will furnish and deliver 50,000 tons of silica sand for road building purposes.

Near Monroe, La., according to reports, a large deposit of silica sand has been found convenient to railway, water and gas. An estimate places the contents of the pit at about 18,000,000 cu. yds. of sand, gravel and road building material underlain by a large strata of silica sand. Development work will be undertaken by J. E. Morgan, W. L. Morgan and H. M. Severance of Monroe.

The Pacific Sand Co. of Portage, Wis., has opened a new silica sand pit about one mile south of the old pit near Hartman Station. E. R. Calkins, who has managed the company for 10 years, has taken into the company A. M. Koepf of Portage, who will manage the operating end of the business, while Mr. Calkins will travel for the sales department. They own extensive beds of foundry sand.

Elkhart Sand & Gravel Co., Elkhart Lake, Wis. Capital stock increased from \$50,000 to \$100,000. A. A. Laun, president.

Construction Materials Co., Chicago, has closed a contract with the H. W. Johns-Manville Co. for filling in low and under water lands near the shore of Lake Michigan, one and one-half miles north of Waukegan, with sand. It is a big contract, the fill covering several hundred acres, where the Johns-Manville Company will erect a big plant later. In order to take care of the job, the Construction Materials Co. is building a special hydraulic dredge which will cut a channel from the lake to the edge of the fill, the channel to be used later by the manufacturing company. The sand taken from the channel will be used in filling.

Incorporations

Monolith Washed Sand and Gravel Co., Manhattan, N. Y. Capital, \$110,000. F. Levy, L. and G. S. Carpenter, 522 Madison St., Brooklyn.

Producers' Sand and Gravel Co., Cleveland, O. Capital, \$50,000. Charles H. Miller, Carl H. Miller, Walter W. Geiger, W. C. McCullough and E. J. Hart.

Negantic and Stanstead Quarry Co., Ltd., Montreal, has been incorporated by Hon. J. E. Roberge, J. H. Rene and H. Lacoursiere, with a capital of \$49,000.

Erie Sand & Gravel Co., Ltd., Windsor, has been incorporated with a capital of \$50,000 by N. J. Urquhart, B. Kent, B. C. Hughes, D. Urquhart and B. F. Moyan, all of Detroit.

Minah Development Co., Boston. Mining in all branches. Capital, \$100,000. Directors: Geo. F. Bartlett, president; Geo. R. Grantham, 117 North St., Danvers, treasurer, and Wm. H. Mitchell.

The Olivine Co., Milwaukee, Wis. Edw. Copps, Herbert F. Johnson, W. J. McElroy, incorporators. This company is to manufacture "Olivine"—a green stone used in roofing and similar work.

Alsen Cement Co. of America, Inc., Manhattan, N. Y. Manufacture cement, Portland cement, etc., cold storage, live stock, general farming and dairy. Capital, \$1,000,000. Incorporators: M. H. Reiss, Lorraine Hotel; G. A. Logan, 141 Broadway, New York City; H. R. Every, Athens.

Portage Silica Products Co., 1403 Conway Bldg., Chicago, Ill., 111 W. Washington St., charter in Wisconsin. General Superintendent, J. N. Thounvenell, Portage, Columbia County, Wis. This company is engaged in the production of silica sand for foundry and glass trades and manufacturing of sand-lime brick. Capital, \$85,000, preferred, and 2,150 shares non-par common. Practically the entire stock issued is to be used in Wisconsin. President, Carl L. V. Exelsen, 1403 Conway Bldg., Chicago.; vice-president, F. A. Rundle, Harvey, Ill.; secretary, E. R. Butler, West Eminence, Mo.; treasurer, W. O. Floing, Garland Bldg., Chicago, Ill.

Lime

The Mitchell Lime Co., Mitchell, Ind., is contemplating adding six more kilns to its plant; this will double the capacity of the present plant, although provision was made for 12 kilns when plans for the present plant were drawn.

Maidencreek Quarry Co., Reading Pa., are constructing a complete lime products plant at Maidencreek Station, seven miles north of Reading on the Philadelphia & Reading railway. The plant will include a crusher and eight kilns with the necessary hydrating machinery.

Manufacturers

Chalmers & Williams, Chicago Heights, Ill., has appointed Diény & Lucas, 50 Rue Taibout, Paris, France, exclusive representatives of the company for France, Belgium and the French and Belgian colonies.

Retail Dealers

Poughkeepsie Concrete Stone Co., Poughkeepsie, has changed name to Lloyd & Holden, Inc.

E. M. Tate, secretary of the Pittsburgh Builders Exchange has been confined to his home by illness.

The Detroit Builders and Trades Exchange will hold its annual outing July 10 at Bob-Lo. It will be a family affair.

The Great Lakes Sand Co., Indianapolis, Ind. Capital, \$10,000. Dealers in sand and gravel. Directors: Charles J. Ruebling, Fred E. Lang, Albert G. Zieske.

Willite Road Construction Co. of Indiana, Indianapolis. Capital, \$100,000. Construction work. Directors: Norman K. Anderson, Benjamin Clark, Robert J. Scott.

The American Materials Co., Ltd., of South River, N. J. Capitalized at \$50,000. It will do a business in plaster, stucco, etc. The incorporators are New York men.

Farmers Milling Co., Embarrass, Wis. Capital, \$15,000. T. H. Buntrock, H. F. Zarling, Aug. Gruetzmacher, all of Embarrass, Wis. Building materials of all kinds.

McClymont Marble Co., Milwaukee, Wis. Capital, \$100,000. Dealers in stone, marble, concrete, all building materials, etc. James J. McClymont, Carlos B. Cook, Chas. L. Kanb. Attorneys: Flanders, Fawcett & Smart, Milwaukee.

Priestley Lumber Co., Milwaukee, Wis. Dealers in lumber and all building materials. Glenn W. Priestley, Eugene E. Wallace and J. W. Flynn, incorporators. \$10,000 stock. Attorney for company, J. W. Flynn, Wells Bldg., Milwaukee.

The entertainment committee of the Cleveland Builders Exchange announces arrangements for the annual outing to the Thousand Islands of the St. Lawrence River by way of Niagara Falls and Toronto. Special arrangements have been made for the accommodation of the party with the best possible service by the transportation companies and hotels. The rate is \$47.50 covering all accommodations from start to finish, including meals, berth, baggage transfer and hotels. The party leaves June 27 and arrives home July 3.

Quarries

A. McNaughton, city clerk, Fort William, Ont., is calling for tenders for an electrically operated rock crushing plant.

The Manganese Cave Mines Co., Cushman, Ark., operating a mine which was originally a natural cave, contemplates the erection of crushing machinery with which to manufacture crushed rock for road building at Penter's Bluff.

Announcement has been made that J. Kingsly, of Billings, Mont., after making an inspection of a stone deposit not far from Ekalaka, Mont., pronounced it excellent for building material and intends to interest friends with him in its development.

The General Crushed Stone Co., of Easton, Pa., has purchased a new stone quarry near Boston, Mass., which has an output of 1,200 tons a day of trap rock. The company will greatly improve this property, and increase the output of the quarry.

G. M. Thomsons, of 176 St. Clemens Ave., Toronto, Can., since his return from the European battlefields, where he has been in active service for a long time, has been organizing a company for the production of trap rock. The rock, he explains, is a gneiss, altered from a pre-cambrian greenstone to what looks rather like a granite gneiss. It is somewhat tough to drill, although it fractures well in blasting. The standard scale of toughness gives an average of 16 for his rock.

Gypsum Products

The British Columbia Gypsum Co. is preparing plans for a plaster mill at Falkland, B. C. Wm. Martin is manager.

Hines Appeals to I. C. C. on Illinois Intrastate Rate Matter

DIRECTOR GENERAL OF RAILROADS HINES has requested the Interstate Commerce Commission to investigate and to "advise him whether in its opinion the present Illinois classification and the present class and commodity rates applicable between points in Illinois should be continued in effect, and if not what amendments should be made thereto, or what classification and what adjustment of class and commodity rates should be substituted therefor," because the Director General has "received complaints from interested shippers, alleging unjust discrimination in favor of shippers in the state of Illinois under the Illinois classification."

The commission has ordered an investigation of all matters under Illinois classification "as compared with those applicable to transportation of property in Indiana, Ohio and Michigan, and to the transportation of property interstate between points in the Central Freight Association territory."

Secretary George B. McGinty has sent official notices to the state public utility commissions of Illinois and Indiana and the carriers. No date has been set for the hearing. This is the continuance of the hearings before the central freight committee in Chicago, dropped a few weeks ago by order of Director of Traffic Chambers.

Producers of mineral aggregates and of other rock products, particularly of Illinois, participated in the Chicago hearings as the inquiry affects them as well as other industries.

Manufacturers' Note

The Allied Machinery Co. of America, 51 Chambers St., New York, has increased its capital stock to \$5,000,000. This was made necessary by the decision of the American International Corporation to group all of its machinery export selling subsidiaries under one head. This move contemplates the complete absorption of the Allied Construction Machinery Corporation by the Allied Machinery Co. of America. The Allied Machinery Co. de France and the Allied Machinery Co. d'Italia will retain their corporate entities but their parent corporation will be the Allied Machinery Co. of America rather than the American International Corporation as before. This is also true of the Horne Company, Ltd., of Japan, which was purchased early in the year by the American International Corporation. The Allied Machinery Co. of America was formed in 1911 to sell machine tools in Europe. In 1916 it was taken over by the American International Corporation. Today the company is operating in fourteen countries. J. W. Hook will continue as president of the Allied Machinery Co. of America, in general charge of the business. Messrs. F. A. Monroe, S. T. Henry and T. G. Lee have been elected vice-presidents. Mr. Monroe is in charge of the administrative affairs of the company; Mr. Henry, sales and advertising; Mr. Nee, in Japan, the affairs of the Horne Company, Ltd. B. P. Redier is general sales manager, with headquarters at Paris.

CLASSIFIED ADVERTISING

Rates for advertising in the Classified Department: 2.50 per column inch per insertion. Minimum charge, \$2.50. Please send check with your order. These ads must be paid in advance of insertion.

Help Wanted

WANTED

Quarry Foreman. One thoroughly familiar with handling powder, in the economical breaking up of sandstone. Answer by letter, giving age, experience, references and salary expected, to

Leesburg Silica Sand Co., New Castle, Penna

WANTED

A good, practical quarry engineer who is capable of designing and erecting crushing plants. State experience, salary and references.

Box 1311 Care Rock Products

WANTED

Experienced Traveling Salesmen acquainted with building supply dealers in territory east of Illinois. State age, references and salary wanted. Address

Lock Box 743 Uhrichsville, Ohio

MAN WANTED

Desire to communicate with man experienced in lime burning and hydrating, both dolomite and high calcium. New plant in Rocky Mountain West. State experience and salary desired. Address

Box 1313 Care of Rock Products

Associates Wanted

BUSINESS ASSOCIATE WANTED—Old established limestone produce corporation offers substantial interest to active associate, capable financing necessary expansion; party possessing engineering knowledge preferred. Particulars, Roberts-Frost Company, 505 Fifth Avenue, New York.

Situations Wanted

SUPERINTENDENT desires engagement with reputable company where ability and thorough knowledge of quarrying is recognized in the performance of efficient operation. References. Address Box 1310, care ROCK PRODUCTS.

WANTED

Position by a man; twenty years' experience as operating and construction supt. of stone quarries and crushing plants. Address

Box 1312 Care of Rock Products

Plants Wanted

WANTED

To buy or lease, sand and gravel lands located in Iowa or southeastern part South Dakota. Address

Box 1307 Care of Rock Products

Plants for Sale

FOR SALE—Half or whole interest in 18 acres best Agric. Lime Quarry; 20 ft. breast. Switch connections to L. N. R. R. Fully equipped for business. Demand for all product at good price, at quarry. Come and see. Frank Dittbenner, R. F. D. No. 3, Franklin, Ky.

FOR SALE

The most complete building material yard in one of the fastest growing cities in Wisconsin, located at Manitowoc, Wis.; "A Building Without Wood" which will give you an idea what our line comprises; reason for selling, the owner having other business connections which he wishes to devote his entire time to; the business will stand a thorough investigation and if necessary to show my good faith in the business will retain a small interest which will leave an asset very valuable to the business; an opportunity for a man or men with some capital, ability and push. Address

JOHN G. JOHNSON

Manitowoc

Wisconsin

FOR SALE

53 acres limestone quarry on railroad at Manitowoc, Colo. Three kilns, switch and full quarry equipment. Immense deposit suitable for all purposes. Address

GANISTER MINING CO.

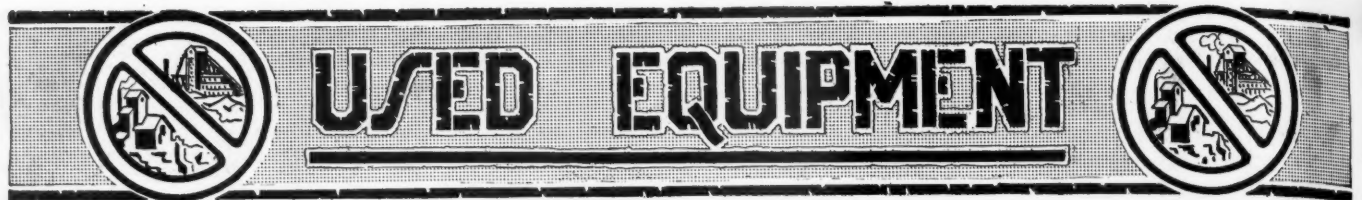
15 Ramona Ave., Colorado Springs, Colo.

FOR SALE

Crushed stone plant near Wymore and Blue Springs, Neb., on Union Pacific and C. & O. railroads; the quarry farthest west in Nebraska or Kansas; 40 ft. of stone; light stripping; large territory; good prospects; 67 ft. of shale under quarry bed. Ideal location for fancy brick or Portland cement plant. Address

G. H. DAVIS, Blue Springs, Neb.

You will get entire satisfaction if you mention ROCK PRODUCTS



Rates for advertising in the Used Equipment Department: \$2.50 per column inch per insertion. Minimum charge, \$2.50. Please send check with your order. These ads must be paid in advance of insertion.

STONE CRUSHERS

Need one, large or small? We are headquarters for good "used" machinery of this character. At present our holdings consist of nearly 100 different sizes—Gyratory Crushers from No. 2 to No. 21, Jaw Type from 8x14" to 60x84", also several Symons Disc and Crushing Rolls.

Let us know your requirements and you will hear from us by return mail. Inquiries also solicited for:

**Locomotive Cranes, Steam Shovels, Locomotives,
Cars, Rails, Hoists, Cableways, Compressors, Etc.**

W. B. Grimshaw & Co., 1048 Drexel Bldg., Phila., Pa.
Dealers in USED but NOT ABUSED Machinery

CRUSHERS

- 1 No. 4-C Symons Gyratory.
- 1 No. 6 Austin Gyratory.
- 1 No. 7½ Austin Gyratory.
- 1 No. 8 Gates Gyratory.
- 1 16 x 24 Buchanan Jaw.

BOILERS

- 1 66 x 16 Horizontal Tubular.
- 1 72 x 18 Horizontal Tubular.
- 3 125 h.p. Locomotive Type.
- 1 275 h.p. Heine Water Tube.

WIRE ROPE

- 10 pcs. 1½-in. Plow Steel, 650 ft. lengths.
- Rails, Cars, Locomotives, Hoisting Outfits, Road
Rollers, Concrete Mixers, Compressors, Etc.

ZELNICKER IN ST. LOUIS

Get Bulletin 250—(250,000 Circ.) 88 Pages

PRIVATE EQUIPMENT

- 5 miles Koppel 24" gauge track
- 40 Koppel steel cars, 24" V shape, 1½ yd.
- 60 Western cars, 24" gauge, 1½ yd.
- 55 cars, 24" gauge, all steel, flat top
- 3 locomotives, 24" gauge
- 150 tons 16 lb. relays with splices
- 2 Koppel locomotives, 24" gauge

D. B. Straley, Crown Point, Ind.

WANTED TO RENT

Gasoline haulage locomotive for quarry use, with option of purchase if satisfactory for our work.

THE HIGBY CANYON SAND CO.
Ottawa Illinois

FOR SALE

Brand new Kennedy No. 5 gyratory crusher and plunger feeder, complete. Are selling on account of not being able to open rock quarry as contemplated. Will sell at considerable reduction. Address

LYCOMING SILICA SAND COMPANY
Montoursville, Pa.

FOR SALE

one 18-inch Bonnot Pulverizer, strictly first class order, immediate shipment

John D. Owens & Son Co.
Owens, Ohio

WANTED

10 36" gauge V shape all metal 2-way rocker side dump cars. Send full description, photographs, price. Address

Box 1308 Care Rock Products

FOR SALE

One No. 4 Champion Rock Crusher, strictly first class condition; immediate shipment. Price \$600.00.

NEW CASTLE MOULDING SAND CO.
New Castle Pennsylvania

Locomotive Crane

For Sale—10 Ton Industrial Crane, Double Drum, 4 wheel with extensions carrying M. C. B. couplers, near Pittsburgh.

WINFIELD RAILROAD CO.
Oliver Building Pittsburgh, Pa.

FOR SALE

No. 12K Gates crusher, Manganese fitted, nickel steel shaft, \$5,570.00.

1—2500 ton crushing plant, Mang. fitted, with Corliss engine drive.

2—1500 cu. ft. air comp. (steam) Duplex.

20—Crushers, No. 3 to 12.

1—312 Kva. 240-480 V. 60 Cy. 3 Ph. non. Cond. Turbo, used 2 yrs. Ex. & S. B.

1—150 Kw. 125-250 V. Dir. Cur. Turbo.

1—110 Kva. 240-480 V. 900 Rev. G. E. generator, Ex. and S. B.

2—300 H.P. 180 lb. Water Tube Boilers, \$9.00 H. P. Piping, etc.

1—400 H. P. 180 lb. H. R. T.-W. T. boiler, stoker, \$9.00 H. P.

1—60 in. by 16 ft. H. R. T. boiler only 100 lb. butt strap 7/16 shell fine condition \$425.00.

ROSS POWER EQUIP. CO.
Indianapolis Indiana

FOR SALE

Climax locomotive, geared, standard gauge, 35 ton, fine condition
Compressor, Sullivan, 650 ft., steam
Compressor, Laidlow Dunn Gordon, belt driven, 420 ft.

10 Western cars, 36" gauge, 4 yd. steel underframe
2 Holt caterpillar tractors
Drag line, 50 ft. steel boom, ¾ yd. dipper

Lock Box 205 Crown Point, Ind.

RAILS

All sections of new and second-hand, on hand for quick shipment. Also purchase old and abandoned plants for dismantling purposes.

M. K. FRANK, Pittsburgh, Pa.

WANTED

A 30" Griffin Mill. Must be in A-1 condition. Machine shop guarantee preferred. Particulars.

A. J. SNYDER
Rosendale New York

☞ This space could have been used to advantage by you. But too late, now. However there's a next issue, always.

☞ What you don't want someone else wants. And what you need someone else has to sell.

☞ State your needs or what you have to sell—in these columns. They pay!

To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry